MARKET ORGANIZATION, VERTICAL COORDINATION AND FARM PRICE STABILITY IN THE FRESH FRUIT AND VEGETABLE INDUSTRY

JOSEPH N. UHL

DOCTOR OF PHILOSOPHY

1969

THESIS

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ABSTRACT

MARKET ORGANIZATION, VERTICAL COORDINATION AND FARM PRICE STABILITY IN THE FRESH FRUIT AND VEGETABLE INDUSTRY

by Joseph N. Uhl

This study was addressed to the problems of harmonizing the economic goals and behavior of the several stages of production and marketing in the fresh fruit and vegetable industry, evaluating the performance of present means of industry vertical market coordination, and defining the dimensions of the institutions and policies necessary for the encouragement of vertical coordination in the industry's distribution channel. Major attention is given to appraising the performance of the marketing sector, its organization, conduct and trends, from the viewpoint of the fresh fruit and vegetable producers' economic interests and welfare. Toward this, the study included an investigation of the interaction of the production and marketing sectors and an appraisal of the contribution of the marketing sector to farm price stability of fresh produce crops.

Instruments of vertical market coordination examined included contractual and ownership integration, financing, forward and deferred pricing schemes, and the role of prices in the task of industry vertical market coordination. Among the identified manifestations of the problem of market conflict and coordination were firm and industry adjustments toward more stable organizational forms, economic crop abandonment, the evolution of institutions for the purpose of either improving vertical market coordination or reducing its costs, and the problem of production and marketing resource allocation under the conditions of price instability.

ABSTRACT

This study was addressed to the problems of maximizing the economic goals and behavior of the several stages of production and marketing in the fresh fruit and vegetable industry, evaluating the performance of present means of industry vertical market coordination, and defining the dimensions of the institutional and policies necessary for the encouragement of vertical coordination in the industry's distribution channel. Major attention is given to appraising the performance of the marketing sector, its organization, conduct and trends, from the viewpoint of the fresh fruit and vegetable producers' economic interests and welfare. Toward this, the study included an investigation of the interaction of the production and marketing sectors and an appraisal of the contribution of the marketing sector to farm price stability of fresh produce crops.

Inadequate of vertical market coordination created inefficient contractual and ownership integration. Therefore, formed and deformed pricing patterns, and the role of prices in the task of industry vertical market coordination. Among the significant manifestations of the problem of market conflict and coordination were farm and industry adjustments toward more stable organizational forms, economic or management, the existence of institutions for the purpose of either improving vertical market coordination or reducing its costs, and the problem of price instability and resource allocation under the conditions of price instability.

Estimates of the stability of farm prices for the market basket of fresh fruits and vegetables and for seven crops--apples, peaches, lettuce, onions, carrots, tomatoes, and celery--are presented. Using each of these in a cross-commodity approach the contribution of acreage and yield variability to price instability was studied by period analysis. Multiple regression analysis employing time series, 1946-64 data provided estimates of crop farm and retail price flexibilities, judgments of crop margin forms, and estimates of associations between farm price stability, supply variates, and selected marketing trends. These were used in evaluating the relative contributions of supply and marketing characteristics to the farm price variability of fresh produce crops.

Testimony from hearings conducted by the National Commission on Food Marketing is used to develop hypotheses of the implications of the interaction of industry production and marketing sectors as well as to interpret the statistical findings of the study. From these hearings two kinds of obstacles to desirable vertical marketing coordination emerge: discrepancies in the interests and incentives of firms in the two sectors and an independence of vertically related marketing efforts. Both kinds of obstacles were found associated with different optimal or desired output and pricing levels in the production and marketing sectors. These institutionally based market conflicts are in turn related to the problem of farm price instability and serve as the focal points for policy recommendations concerned with improving vertical market coordination and resource allocation in the industry.

A review of past public policy for this industry indicates more consideration should be given the problem of farm price instability

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I would like to express my gratitude to Dr. L. L. Boger, Chairman of the Department of Agricultural Economics, for providing the funds for the completion of my graduate studies and this dissertation.

For whatever merit is in the study, two men must be given credit. Dr. James Shaffer served as my major professor and thesis chairman. His encouragement of my graduate studies and innumerable contributions to this study are gratefully acknowledged. Dr. Marshall Godwin was also of assistance in the development of the problems and concepts discussed in the thesis. Both men, however, are exempt from responsibility for errors in logic, form and content of the study.

A great debt is also owed my family and wife, Mary, whose encouragement and patience were sources of inspiration.

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TABLE OF CONTENTS

	Page
LIST OF TABLES	v
LIST OF FIGURES	vii
LIST OF APPENDICES	viii
CHAPTER 1. VERTICAL INTERACTION AND COORDINATION IN AGRICULTURAL MARKETS: THE PROBLEM DEFINED	1
Problem and Objectives	1
Market Conflict, Coordination and Resource Allocation	4
The Problem of Agricultural Price Stability	11
Agricultural Production and Marketing Interaction: Review	17
Organization of the Study	24
CHAPTER 2. FARM PRICE STABILITY AS A PROBLEM IN THE FRESH FRUIT AND VEGETABLE INDUSTRY: DEFINITION AND MEASUREMENT	26
The General Relation of Farm Market Stability and the Marketing Sector	27
Farm Price Instability in the Fresh Produce Industry	37
Aspects, Sources and Manifestations of Agricultural Price Instability	40
CHAPTER 3. THE ECONOMIC ORGANIZATION OF THE FRESH FRUIT AND VEGETABLE INDUSTRY	52
The Producer-First Handler Relation	54
Shipping Point Exchange Relations	66
Shipping Point Integration	71
The Shipping Point Sales Market	80
The Wholesale Terminal Market	88
The Retail Market Sector	91
CHAPTER 4. HISTORICAL PRICE STRUCTURE AND STABILITY IN THE FRESH FRUIT AND VEGETABLE INDUSTRY	99
Temporal Stability	99
Spatial Stability	113
Price Stability and the Marketing Margin	117
A General Model of Fresh Fruit and Vegetable Farm Prices	122
CHAPTER 5. VERTICAL COORDINATION AND FARM PRICE INSTABILITY IN THE FRESH FRUIT AND VEGETABLE INDUSTRY	133

TABLE OF CONTENTS

Page

LIST OF TABLES. v

LIST OF FIGURES vii

LIST OF APPENDICES. viii

CHAPTER I. VERTICAL INTEGRATION AND COORDINATION IN AGRICULTURAL MARKETS: THE PROBLEM DEFINED. 1

Problem and Objectives. 1
Market Conflict, Coordination and Resource Allocation. 4
The Problem of Agricultural Price Stability. 11
Agricultural Production and Marketing Interaction: Review. 17
Organization of the Study. 24

CHAPTER 2. FARM PRICE STABILITY AS A PROBLEM IN THE FRESH FRUIT AND VEGETABLE INDUSTRIES: DEFINITION AND MEASUREMENT. 26

The General Relation of Farm Market Stability and the Marketing Sector. 27
Farm Price Instability in the Fresh Produce Industry . . 37
Aspects, Sources and Manifestations of Agricultural Price Instability 40

CHAPTER 3. THE INCREASED ORGANIZATION OF THE FRESH FRUIT AND VEGETABLE INDUSTRY 52

The Processor-Fresh Market Relation. 54
Shipping Point Bargaining Relations 56
Shipping Point Integration. 71
The Shipping Point Sales Agent. 80
The Wholesale Terminal Market. 86
The Retail Market Sector 91

CHAPTER 4. HISTORICAL PRICE FLUCTUATIONS AND STABILITY IN THE FRESH FRUIT AND VEGETABLE INDUSTRY 99

Temporal Stability 99
Spatial Stability. 113
Price Stability and the Marketing Margin 117
A General Model of Fresh Fruit and Vegetable Farm Prices. 122

CHAPTER 5. VERTICAL COORDINATION AND FARM PRICE INSTABILITY IN THE FRESH FRUIT AND VEGETABLE INDUSTRY. 133

TABLE OF CONTENTS (continued)

	Page
The Sources of Price Instability	134
Market Conflicts as Sources of Instability	146
Manifestations of Price Instability and Producer Adjustments	152
Marketing Institutions and Risks	160
The Shipping Point Exchange Relation	161
The Residual Income Claimant Position	179
Shipper Financing of Producers	189
Shipping Point Enterprise Combination and Integration	197
Farm Price Stability and the Retail Marketing Effort	205
Summary	223
CHAPTER 6. MEASUREMENT OF RELATIONSHIPS BETWEEN THE MARKET SECTOR AND THE FARM PRICE STABILITY OF FRESH FRUITS AND VEGETABLES	226
Trends in Farm Prices	233
Supply-Induced Farm Price Variability: The Evidence	236
Demand Elasticity and Farm Price Instability	247
Farm Price Stability and Trends in the Marketing Sector	260
CHAPTER 7. SUMMARY, CONCLUSIONS AND POLICY IMPLICATIONS	272
Policy Implications	276
Toward a Policy of Channel Coordination	286
A SELECTED BIBLIOGRAPHY	289
APPENDIX A	292
APPENDIX B	297

TABLE OF CONTENTS (continued)

Page

The Sources of Price Instability 124
Market Conflicts as Sources of Instability 146
Manifestations of Price Instability and Producer
Adjustments 152
Marketing Institutions and Risks 160
The Shipping Point Inducare Relation. 161
The Residual Income Claimant Position 179
Shipper Financing of Producers. 189
Shipping Point Enterprise Coordination and
Integration. 197
Farm Price Stability and the Retail Marketing
Report 209
Summary. 223

CHAPTER 6. MEASUREMENT OF RELATIONSHIPS BETWEEN THE MARKET
SECTOR AND THE FARM FIRM'S STABILITY OF FARM PROFITS AND
VULNERABILITY 236

Trends in Farm Prices. 239
Supply-Induced Farm Price Variability: The Evidence . . 246
Demand Elasticity and Farm Price Instability 247
Farm Price Stability and Trends in the Marketing
Sector. 260

CHAPTER 7. SUMMARY, CONCLUSIONS AND POLICY IMPLICATIONS. . . 272

Policy Implications. 276
Toward a Policy of Channel Coordination. 286

A SELECTED BIBLIOGRAPHY 289

APPENDIX A. 292

APPENDIX B. 297

LIST OF TABLES

Table		Page
1.	Trends in Numbers and Sizes of Fresh Fruit and Vegetable Shipping Point Firms, 1948-65.	58
2.	Marketing Terms for South Texas Vegetable Marketing Contracts, Sample Survey of Canners, Farmers, and Packer-Shippers, 1958	76
3.	Contractual and Ownership Integration of Fresh Vegetable Production and Marketing in the Major Truck Crop Producing Areas of the United States, by Kinds of Crops, 1958-59	78
4.	Sales Terms for Retail and Wholesale Purchases of Fresh Fruits and Vegetables from Shipping Point Markets, 1958-59.	84
5.	Survey of the Pricing Process between Shipping Point Sellers and Wholesalers and Retailers of Fresh Fruits and Vegetables. 1958-59	87
6.	Sources of Retail Fresh Fruit and Vegetable Supplies, by Kinds of Retailers, 1958-59.	93
7.	Retail Chainstore Fresh Fruit and Vegetable Supply Sources, by Size of Firm, 1958.	94
8.	Index of Prices Received by Farmers for Fresh Fruits and Vegetables and other Farm Products, 1935-65.	103
9.	Relative Importance of Seasonal and Irregular Farm Price Movements for Selected Food Products, 1947-58.	104
10.	Annual Variability of Value per Acre, Yield and Farm Prices of Selected Fresh Vegetables, 1918-40.	109
11.	Retail Price Variations of Selected Food Products, Seasonal Range and Standard Deviation, 1956-65.	112
12.	Annual Farm Price Variation of Selected California Fresh Fruits and Vegetables, by Seasonal Groups, 1918-57.	114
13.	Index of Daily Price Variability for Selected Fresh Vegetables in 16 Wholesale Produce Markets, 1957-58.	116
14.	Harvest, Packing and Shipping Costs of Selected South Texas Fresh Vegetables, 1941-65.	181
15.	Selected Production and Marketing Characteristics of Fresh Fruit and Vegetable Crops Chosen for Study	228

LIST OF TABLES

Table

1. Trends in Acreages and Values of Fresh Fruit and Vegetable Shipping Point Price, 1924-39. 58

2. Marketing Terms for South Texas Vegetable Marketing Contract, Typical Survey of Growers, Planters, and Shippers, 1941 76

3. Contractual and Ownership Liberation of Fresh Vegetable Production are Functioning in the Major Truck Crop Areas of the United States, by Films of Crops, 1939-57 . 79

4. Sales Terms for Retail and Wholesale Purchases of Fresh Fruits and Vegetables from Shipping Point Markets, 1935-39. 84

5. Survey of the Pricing Process between Shipping Points and Wholesalers and Retailers of Fresh Fruits and Vegetables. 1939-39 87

6. Sources of Retail Fresh Fruit and Vegetable Supplies, by Kinds of Markets, 1939-39. 93

7. Retail Quantities Fresh Fruit and Vegetable Supply Sources, by Value of Film, 1939. 94

8. Index of Prices Received by Farmers for Truck Fruits and Vegetables and Other Farm Products, 1935-39. 103

9. Relative Importance of Seasonal and Irregular Farm Price Movements for Selected Food Products, 1927-39. 104

10. Annual Yearly Utility of Value per Acre, Yield and Farm Prices of Selected Fresh Vegetables, 1939-49. 107

11. Retail Price Variations of Selected Food Products, Seasonal Range and Standard Deviation, 1935-39. 112

12. Annual Farm Price Variation of Selected California Fresh Fruits and Vegetables, by Seasonal Groups, 1919-37. . . . 114

13. Index of Daily Price Variability for Selected Fresh Vegetables in Its Relative Producing Markets, 1937-39. 115

14. Harvest, Packing and Shipping Peaks of Selected South Texas Fresh Vegetables, 1941-49. 121

15. Selected Production and Marketing Characteristics of Fresh Fruit and Vegetable Crops Chosen for Study 128

LIST OF TABLES (continued)

Table		Page
16.	Price Index of Selected Fresh Fruits and Vegetables, 1947-64.	232
17.	Trend in Farm Price and Yield Variability of Selected Fresh Vegetables, 1918-64.	239
18.	Trends in Alternative Measures of Farm Level Variability for Selected Fresh Fruits and Vegetables, 1946-64. . .	242
19.	Rankings of Selected Fresh Fruits and Vegetables by Measures of Farm Market Stability, 1946-64	244
20.	Farm and Retail Price Flexibilities and Farm Price Elasticities for Selected Fresh Fruits and Vegetables, 1946-64.	250
21.	Classification of Marketing Margin Forms for Selected Fresh Fruits and Vegetables, 1946-64	254
22.	Selected Variables Representing Trends in the Market Organization and Conduct of the Fresh Fruit and Vegetable Industry	261
23.	Relationship of Crop Output and Marketing Trends to the Farm Price Stability of Selected Fresh Vegetable Crops, 1946-64.	265
A-1.	Supply, Utilization, Prices, and Marketing Costs for Fresh Fruits and Vegetables, 1947-64	292
A-2.	Market Level Cost Components of the Fresh Fruit and Vegetable Marketing Margin, 1964	294
A-3.	Calculation of the Index of Fresh Fruit and Vegetable Marketing Costs, 1947-64.	295
B-1.	Selected Trends in the Market Organization of the Fresh Fruit and Vegetable Industry, 1946-65.	297

LIST OF TABLES (continued)

Table		Page
16.	Price Index of Selected Fresh Fruits and Vegetables, 1947-64.	232
17.	Trend in Farm Price and Yield Variability of Selected Fresh Vegetables, 1951-64.	239
18.	Trends in Alternative Measures of Farm Level Variability for Selected Fresh Fruits and Vegetables, 1951-64.	242
19.	Rankings of Selected Fresh Fruits and Vegetables by Measures of Farm Market Stability, 1951-64	244
20.	Farm and Retail Price Flexibilities and Farm Price Elasticities for Selected Fresh Fruits and Vegetables, 1951-64.	253
21.	Classification of Marketing Margin Forms for Selected Fresh Fruits and Vegetables, 1947-64	274
22.	Selected Variables Representing Trends in the Level of Organization and Control of the Fresh Fruit and Vegetable Industry	281
23.	Relationship of Crop Output and Marketing Trends to the Farm Price Stability of Selected Fresh Vegetable Crops, 1948-64.	285
A-1.	Supply, Utilization, Prices, and Marketing Costs for Fresh Fruits and Vegetables, 1947-64	292
A-2.	Market Level Cost Components of the Fresh Fruit and Vegetable Marketing Margin, 1947	294
A-3.	Calculation of the Index of Fresh Fruit and Vegetable Marketing Costs, 1951-64.	295
B-1.	Selected Trends in the Level of Organization of the Fresh Fruit and Vegetable Industry, 1947-65.	297

LIST OF FIGURES

Figure		Page
1.	Major Marketing Channels for Fresh Fruits and Vegetables. .	55
2.	Stability of Fresh Vegetable Farm Prices, Income and Supplies, 1946-1964.	107
3.	Trend in Seasonal Retail Price Variation, Fresh Fruits and Vegetables and All Foods, 1947-1965.	111
4.	Trends in Prices, the Marketing Margin and Marketing Costs, Fresh Fruits and Vegetables, 1947-1964	118
5.	Annual Stability of Fresh Fruit and Vegetable Prices and Marketing Margins, 1947-1964	120
6.	The Demand and Price Structure for Fresh Fruit and Vegetable Markets: General Model.	123
7.	Fresh Vegetable Farm Price Stability, Economic Crop Abandonment and Domestic Production, 1946-1964.	128
8.	Impack of Weak Sellers on Shipping Point Market Prices for Fresh Fruits and Vegetables.	140
9.	Effects of Retail Pricing Policies on the Farm Demand for Fresh Fruits and Vegetables.	221
10.	Year to Year Variability in Farm Prices of Selected Fresh Fruits and Vegetables, 1946-1964	234

LIST OF FIGURES

Figure		Page
1.	Major Marketing Channels for Fresh Fruits and Vegetables.	55
2.	Stability of Fresh Vegetable Farm Prices, Income and Supplies, 1924-1934.	107
3.	Trend in Seasonal Retail Price Variation, Fresh Fruits and Vegetables and All Foods, 1924-1934.	111
4.	Trends in Prices, the Marketing Margin and Marketing Costs, Fresh Fruits and Vegetables, 1947-1934.	118
5.	Annual Stability of Fresh Fruit and Vegetable Prices and Marketing Margins, 1947-1934.	120
6.	The Demand and Price Structure for Fresh Fruit and Vegetable Markets: General Model.	129
7.	Fresh Vegetable Farm Price Stability, Economic Crop Adjustment and Domestic Production, 1924-1934.	132
8.	Impact of Weak Outlets on Declining Industry Farm Prices for Fresh Fruits and Vegetables.	140
9.	Effects of Retail Pricing Policies on the Farm Demand for Fresh Fruits and Vegetables.	221
10.	Year to Year Variability in Farm Prices of Selected Fresh Fruits and Vegetables, 1926-1934	224

LIST OF APPENDICES

Appendix		Page
A.	Supply, Utilization, Prices and Marketing Costs for Fresh Fruits and Vegetables, 1947-64.	292
B.	Selected Trends in the Market Organization of the Fresh Fruit and Vegetable Industry, 1946-65	297

LIST OF APPENDICES

Appendix		Page
A.	Supply, Utilization, Prices and Marketing Costs for Fresh Fruits and Vegetables, 1947-64.	292
B.	Selected Trends in the Market Organization of the Fresh Fruit and Vegetable Industry, 1946-65	297

Chapter 1.

VERTICAL INTERACTION AND COORDINATION IN AGRICULTURAL MARKETS: THE PROBLEM DEFINED

Problem and Objectives. The central objective of this study is to examine the economic interaction between the market levels in a distribution channel for a farm product; the central problem is to determine the implications of this interaction and of trends in the organization and institutional structure of a farm product market sector for the performance of farm markets. The interaction of vertically related firms in an agricultural distribution channel has received little attention both in economic and marketing thought. The former has a proclivity for ephasizing the poles of this interaction, the equilibrium obtaining between initial producer and consumers. The latter is characterized by a pragmatic, descriptive approach which, while it has made clear the importance of the marketing sector, has not stimulated inquiry into its performance for its users, the producers and consumers.

In 1963 the Department of Agriculture published a work which attempted to synthesize these two approaches and to stimulate research into the interaction of the marketing and production sectors for agricultural products.[1] The purposes of the work were to promote the description and measurement of the means of vertical coordination of agricultural markets, to analyze the effects of different kinds of vertical coordination, and to study barriers to desirable adjustments in the vertical coordination of markets. The broad objectives of the present study coincide with these directives.

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[1] Mighell, R.L., Jones, L.A., Vertical Coordination in Agriculture, U.S. Department of Agriculture, Economic Research Service, Agricultural Economic Report No. 19, February, 1963, 90 pp.

Chapter I.

VERTICAL INTEGRATION AND COORDINATION IN AGRICULTURAL MARKETS: THE FARM MILK MARKET

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[1] Shepherd, R.L., Jones, L.A., Vertical Coordination in Agriculture, U.S. Department of Agriculture, Economic Research Service, Agricultural Economic Report No. 19, February, 1963, 90 pp.

Following this was the work of the National Commission on Food Marketing, a Presidential Commission effective from January 1965 to June 1966, whose Congressional charge included an appraisal of contemporary trends and changes in the food marketing sector and their implications for producers and consumers.[2] The reports of the Commission do not explicitly deal with the problems put forth by the Department of Agriculture study in 1963. However, much of the data published by the Commission along with staff interviews and public hearings is relevant to these questions and serves as the principal data source for this study.[3]

Like the U.S. Department of Agriculture publication the problem of the Commission was to appraise the performance of the marketing sector.

[2]Public Law 88-354, 88th Congress, S.J. Res. 71, July 3, 1964.

[3]The author served on the staff of this Commission. However, the views expressed in this study are the author's only and do not necessarily reflect those of the National Commission on Food Marketing or of its staff. All of the data used in this study has either been published elsewhere by the Commission or was gathered in the course of staff duties but not considered confidential. The final report of the Commission was entitled: Food from Farmer to Consumer, Report of the National Commission on Food Marketing, U.S. Government Printing Office, Washington, D.C., June 1966. Staff technical studies are contained in 10 volumes, of which the principal one referred to in this study is: Organization and Competition in the Fruit and Vegetable Industry, Technical Study No. 4, National Commission on Food Marketing, Washington, D.C., June 1966, hereafter referred to as NCFM Technical Study No. 4. The public hearings of the Commission were not published and are not widely available. But they are not confidential and the official transcripts of proceedings are available, though at considerable cost, from Press Stenotypists Association, W & P, Inc. 917, G. Street, N.W., Washington, D.C. The author has a set of these transcripts and a set is deposited with the National Agricultural Library in Washington, D.C. Where these hearings are used throughout the study, liberal excerpts are used with the belief that the reader may never have access to the transcripts. One caveat is in order. The privilege to "revise and extend" was never given to the participants in these hearings; while some grammatical errors in the transcript have been corrected for this study, these have been held to a minimum in order to preserve the original statements. The excerpts should be judged with this in mind. Throughout the study these hearings are referred to as NCFM Hearings, followed by the city in which they were held and the page number of the original transcript.

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Considerably more of the Commission's time and recommendations were concerned with market performance from the producers' standpoint than from the consumers' viewpoint. This is an indication not only of the Commission's perceived clientele but also the state of the arts in evaluating market performance. Criteria for measuring the performance of agricultural markets for producers' welfare are more explicit than those for examining consumers' welfare. Nevertheless, the criteria for even the former are complex, multi-dimensional, often conflicting, and apparently changing over time. This study focuses primarily on farm price instability as one aspect of producer welfare and relates this criterion to the interaction of the vertically related production and marketing sectors. It is to be emphasized that the use of other criteria might result in different conclusions regarding the implications of vertical interaction of these sectors and the need for additional revised vertical coordinating mechanisms.

The broad objectives of this study are: (1) to examine the magnitude of farm price instability for fresh fruit and vegetable crops; (2) to study the sources and manifestations of this price instability; (3) to describe the organizational characteristics and institutional structure of the fresh fruit and vegetable marketing sector relating to vertical market coordination and this instability; and (4) to appraise the implications of the interaction of the production and marketing sectors of this industry for public policy dealing with market coordination and farm price instability. In each of these is the common problem of the interaction and coordination of economic interests in a distribution channel.

common problem of the integration and coordination of economic interests in a distribution channel.

The broad objectives of this study are: (1) to examine the magnitude of farm price instability for fresh fruit and vegetable crops; (2) to study the sources and manifestations of this price instability; (3) to describe the organizational characteristics and institutional structure of the fresh fruit and vegetable marketing sector relating to vertical market coordination and this instability; and (4) to appraise the implications of the integration of the production and marketing sectors of this industry for public policy dealing with market coordination and farm price instability. In each of these is the Commission's perceived clientele but also the state of the arts in evaluating market performance. Criteria for measuring the performance of agricultural markets for producers' welfare are more explicit than those for examining consumers' welfare. Nevertheless, the criteria for even the former are complex, multi-dimensional, often conflicting, and apparently changing over time. This study focuses primarily on farm price instability as one aspect of producer welfare and relates this criterion to the interaction of the vertically related production and marketing sectors. It is to be emphasized that the use of other criteria might result in different conclusions regarding the implications of vertical integration of these sectors and the need for additional revised vertical coordinating mechanisms.

Generally more of the Commission's time and recommendations were concerned with market performance from the producers' standpoint than from the consumers' viewpoint. This is an indication not only of the Commission's perceived clientele but also the state of the arts in evaluating market performance. Criteria for measuring the performance of agricultural markets for producers' welfare are more explicit than those for examining consumers' welfare. Nevertheless, the criteria for even the former are complex, multi-dimensional, often conflicting, and apparently changing over time. This study focuses primarily on farm price instability as one aspect of producer welfare and relates this criterion to the interaction of the vertically related production and marketing sectors. It is to be emphasized that the use of other criteria might result in different conclusions regarding the implications of vertical integration of these sectors and the need for additional revised vertical coordinating mechanisms.

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Market Conflict, Coordination and Resource Allocation. This is a study of vertical market relations in the fresh fruit and vegetable distribution channel. The choice of this industry is first of all a reflection of the author's interests and, hopefully, competency. The analysis of vertical coordination as the problem is developed in this study requires a thorough knowledge of the technical and economic characteristics of the product and industry. These are discussed in some detail in chapter 3. In addition both because the marketing effort is not complicated by extensive changes in product form and because the urgency of marketing such a perishable product illuminates vertical interdependence and problems of market coordination, this industry seems uniquely suited for examining the general problem of market coordination and interaction.

Marketing may be defined in a number of ways. I intend to depart here from the view that marketing is merely the extension of productive activities, namely the creation of form, time, and space utilities. It is true these activities are carried on in the marketing sector. But no useful purpose has been served, production-marketing integration cases notwithstanding, by ignoring the small yet significant differences in the economic activities carried on in the production sector and those carried on in the marketing sector. For perishable agricultural products there is first of all a difference in the time horizon for production decisions and marketing decisions. Biological crop characteristics dictate that most output decision be made by the producer considerably in advance of the time at which the crops will be sold. On the other hand, neglecting any influence the marketing sector might have on the production process through ownership or

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contractual integration, most marketing decisions for agricultural crops are of a short-run variety. It is true firms have long-range marketing plans, but the period of time for which the crop is held in the marketing sector emphasizes short-run decisions. This is a fundamental difference between the production and marketing sectors for fresh fruits and vegetables; the producer makes decisions about total supply for long periods, several years for fruit crops, relative to the time horizon for the corresponding marketing decisions. A consequent problem of market coordination centers on the relative informational needs for these two kinds of decisions.

A second distinction between the economic activities of the production and marketing sectors in the fresh fruit and vegetable industry is that the latter is the locus of numerous negotiation processes and the place where product value is determined. For the most part price formation does not occur when the product is introduced into the fresh fruit and vegetable marketing channel; it is, instead, a result of the marketing process. At each market level in the distribution channel there is a series of negotiations resulting in prices for crops. But the negotiators do not own the crop nor is their supply function a cost curve. It is instead a market trading curve and the prices resulting from negotiation under these circumstances at any one time need have no relation to final demand or the cost of producing the product. This, too, has implications for the problem of market coordination.

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Marketing will be defined in this study as a set of interdependent, vertically-aligned economic institutions having as their purpose the regulation of buyer and seller interaction, the negotiation of market

terms of trade, and the vertical coordination of product flow from producers to consumers. The definition emphasizes the vertical interdependence of buyers and sellers in a distribution channel and the need for insuring that their interaction is coordinated for maximum economic efficiency.

The above definition of marketing raises the question why competition and profit-seeking will not insure that the interests of buyers and sellers are congruent. One of the central interests of the Nighell-Jones thesis was the problem of harmonizing the several market stages in agriculture, each of which may have differing optimal price and output levels.[4] According to these authors, "In practical situations it would be unusual for the optimum output of one stage to coincide exactly with that of earlier or later stages."[5] The possibility and implications for this are examined later in the study. It is sufficient to note here that such a situation of market conflict calls for a resolution in some fashion. The institutional means of this conflict resolution are what this author means by the coordinating role of the marketing sector.

In order to study market coordination and potential conflict in the fresh fruit and vegetable industry, the industry will be divided into a series of interdependent firms, functions and market decisions, all of which are directed toward three goals: (1) the satisfaction of consumer demand; (2) the profitability and survival of firms in the face of the marketing risk associated with a highly perishable product; and (3) the distribution of joint channel profits. The interdependence

[4] Op. cit., p. 2.

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of firms in the industry arises from the importance of product perishability for all these goals. Because it is the function of each firm in the channel to transfer the product with a minimum of physical change and because the product quality deteriorates with time, there is a high degree of interdependence between the vertically related firms in the industry. Prices, costs, and profits at each market level are determined by the quality and quantity of the marketing effort at preceeding and succeeding market levels. Poor cultivation or improper product handling by producers or shippers have the effect of increasing retail and wholesale marketing costs. Similarly, the prices received at shipping point and by producers are directly affected by the quality of the merchandising and pricing effort at the retail level. Besides resulting in pressures for integration of the market levels, this interdependence has two major economic implications. It first places a premium on efforts and institutions which can coordinate the marketing efforts of the several interrelated firms in the distribution channel. Secondly it results in the problem of who should bear the marketing risks and costs when the coordination is inadequate and there are resulting losses in product and profit.

Following Boulding three mechanisms for coordinating a market can be identified: the exchange system, the threat system and the integrative system.[6] While each of these has the capability for organizing and coordinating the marketing efforts of vertically-related traders, their performance differs and they employ different mechanisms for effecting conflict resolution. All three forms of market organization

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are found in the fresh fruit and vegetable industry, none in the pure state. The trend over time in the substitution of these alternative forms of market organization for one another has implications for the farm price stability of fresh fruits and vegetables.

The principal difference in the performance of the three forms of market coordination for the purposes of the study at hand lies in the role of prices in directing resource allocation in the production of fresh fruits and vegetables. The exchange form of organization relies closely on market prices as guides to resource allocation in production. If demand is clearly transmitted to all producers, there are no significant lags in resource adjustments and knowledge is reasonably good, the exchange system will result in each production and marketing factor receiving a return equal to its marginal productivity. In contrast, the integrative system substitutes an administrative decision for the directive role of price in allocating resources in production. Both the exchange and integrative systems may reduce marketing conflicts between vertically related firms. Finally, coercion is the primary coordinating mechanism for the threat system, and this is not a true conflict resolution.

The length of the production process and the interdependence of the vertically-related firms in the fresh fruit and vegetable industry call into question whether prices can satisfactorily coordinate the production and marketing processes. Prerequisites for this task would be that prices accurately reflect all desirable and undesirable product attributes in trading and consumption, that prices are an acceptable reflection of supply and demand, and that prices are reasonably independent of individual firm behavior. A number of observers have

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questioned the capability of prices for coordination agricultural markets. In a study of the California fresh deciduous fruit industry, Jamison placed the onus for poor coordination of the production sector with consumption requirements on the heavy reliance placed on prices for coordinating industry efforts.[7] In a like manner Clodius laid the responsibility for agricultural price and income variation on the isolated and uncoordinated character of aggregate supply and the crude and imperfect responses to prices which cannot effectively coordinate supply with demand.[8] In a somewhat different view, Collins has argued that there are excessive costs to coordinating markets by prices which do not reflect the combined production possibilities of growers nor all dimensions of trader preference and fail to communicate all elements of product quality.[9] Finally, Briemeyer suggests prices are less than desirable market coordinators because they are subject to misinterpretation, and the negotiation process between traders is characterized by uncertainty and a contract curve of indefinite length.[10]

If prices are judged insufficient for the needs of a highly interdependent marketing and production system, other means of market coordination may be forthcoming. Oswald Blaich suggests that integrative systems are substituted for exchange systems because price

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[7]Jamison, J.A., The California Fresh Deciduous Fruit Industry: Structure, Organization and Practices, California Agricultural Experiment Station, Giannini Foundation Research Report No. 275, April 1964, p. 125.

[8]Clodius, R.L., "Market Structure, Economic Power and Agricultural Policy: A Proposal for Forward Production Control", Journal of Farm Economics, 42:413-25, May 1960.

[9]Collins, N.R., "Changing Role of Price in Agricultural Marketing", Journal of Farm Economics, 41:528, Aug. 1959.

[10]Breimyer, H.F., "On Price Determination and Aggregate Price Theory", Journal of Farm Economics, 39:676-94, Aug. 1957.

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[9]Collins, N.R., "Changing Role of Price in Agricultural Marketing", Journal of Farm Economics, 41:327, Aug. 1959.

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coordination is not only unsatisfactory but also involves high costs of price discovery and product specification error.[11] And Cochrane reasons that integrated systems have come to replace exchange systems in agricultural markets as a means of coordinating production and marketing because of the uncertainty in prices and the fact that product quality attributes are valued differently among marketers with different goals and sales strategies.[12] Most of these criticisms of the role of price in coordinating production and marketing of agricultural products are concerned with the specificity of prices, their value in market communication and in directing resource allocation in production. They are reviewed here because the resulting integrated structures are of interest to the marketing process for fresh fruits and vegetables and because much the same criticism can be made about the instability of prices at farm level; volatile prices are subject to a number of interpretations by producers, they may be unrelated to product volumes and qualities, and they cannot evoke appropriate resource adjustments.

The second result of the interdependence of vertically related firms in a market channel, the problem of marketing risks and costs when coordination fails, is the subject of the greater part of this study. If there are costs to present means of vertical coordination and resistance to change or improvement of these mechanisms, there remains the problem of their incidence. As will be shown a number of market institutions have evolved for the purpose of either reducing this cost or distributing it among the marketing and production sectors.

Vertical market interdependence and coordination are studied here

[11] Blaich, O.P., Vertical Integration in Theory, University of Minnesota, Department of Agricultural Economics, Report No. 520, Nov. 1961.

[12] Cochrane, W.W., "Changing Structure of the American Economy: Its Implications for the Performance of Agricultural Markets," Journal of Farm Economics, 41:406, May 1959.

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The second result of the interdependence of vertically related firms in a market channel, the problem of marketing risks and costs when coordination fails, is the subject of the remainder part of this study. If there are costs to present means of vertical coordination and resistance to change or improvement of these mechanisms, there remains the problem of their incidence. As will be shown a number of market institutions have evolved for the purpose of either reducing this cost or distributing it among the marketing and production sectors.

Vertical market integration, finance and coordination are studied here

[11]Clark, O.P., Vertical Integration in Agriculture, University of Minnesota, Department of Agricultural Economics, Report No. 170, Nov. 1961.

[12]Cochrane, W.W., "Conditioning Structure of the American Economy: Its Implications for the Performance of Agricultural Markets," Journal of Farm Economics, XL:806, May 1959.

for their importance to industry allocation of resources in production and marketing. The problem of resource allocation is a problem of coordination and incentives. For the most part, mechanisms and problems of market coordination are emphasized in this study. But the justification for the study lies in the importance of market coordination for resource allocation. In this sense the study of farm price stability and the coordinating role of the marketing sector is intermediate to the ultimate economic problem of the study--the efficient allocation of resources in the fresh fruit and vegetable industry.

The Problem of Agricultural Price Stability. There is a conspicuous lack of a theory of agricultural price stability. To be sure the place of stability as a goal and problem in the agricultural economy is secure. But there is no framework of analysis for studying the problem. As T.W. Schuls put it in an early writing:

> ". . .no general principles have been established for analyzing the problem of instability, principles that are on a footing with those employed in ascertaining whether an optimum utilization of resources is achieved in the long-run. The analytical tools with which economists work have not been designed to handle problems of the type on which we are focusing, that is, for dealing with the short and sudden flucuations of the main economic aggregates."[13]

Stability is more frequently an assumption than a problem of economic studies of resource allocation. However, relative price stability is important to the expectation functions, the short-run decisions and the long-run commitments surrounding the allocation of resources in the production of agricultural products, and there would appear a need for economic tools facilitating its study.

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[13]Schultz, T.W., Production and Welfare of Agriculture, (New York: The Macmillan Company), 1950, p. 64.

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[1]Schultz, T.W., Production and Welfare of Agriculture, (New York: The Macmillan Company), 1949, p. 44.

There are three principal problem areas for the student of market stability: the choice of stability measures, the choice of data, and the selection of correlates of market stability.

Market stability may be measured in a number of ways. Generally, market stability is measured in terms of variations in income, prices and quantities traded.[14] But other measures such as price-cost stability, stability of firms, stability of market trading relations, or profit stability could also be used. Here, farm price stability is of concern.[15] However, price stability is only the outward manifestation of the problems studied, that is, the ability of prices to direct economic resources into their most efficient uses. Price variability is of interest only insofar as prices are used in the process of resource allocation; it is only when prices fail in their directive and coordinating role in resource allocation that price stability becomes a problem.

In studying market stability as reflected in price variations, a

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[14] Schultz observes that neither production, price nor income movements accurately measure the costs of instability in farm markets; nor do they explain the causes of the instability in farm markets nor the means of correcting it: Ibid., p. 65.

[15] A price measure of market stability seems most appropriate for appraising the vertical interaction of market sectors since it is one concept common to all market levels and because of its importance in resource allocation of production. In contrast, profit stability might be more appropriate for measuring market stability when horizontal market relations are studied. It might be added here that stability is a preferable measure of vertical market interaction to price or income levels because there are no legal sanctions on market organization and behavior influencing the price stability at other market levels as there are governing behavior influencing price levels elsewhere in the market such as the Robinson-Patman Act and Fair Trade Laws. In this sense, the study of stability is less institutionally determined than the study of price levels.

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dilemma is encountered. It is necessary to aggregate data if one's scope of study and results are to extend beyond the local level. But there are problems arising from this aggregation, particularly in the fresh fruit and vegetable industry. In such an industry it becomes necessary to aggregate prices over time, areas, firms and products — all dimensions of the market for which known price variability exists. It is probable this level of aggregation masks many aspects of price variability; it may, as well, create some variability. One study dealing with the problems of aggregation and the measurement of stability concluded, ". . .aggregated data are not useful for estimating farm level variabilities."[16] Schultz warned that at the national level of aggregation regional crop failures may be disguised by high yields and prices in other areas.[17] Also, national income stability may be observed due to the market demand elasticity approaching unity at that level, although local demand elasticity is considerably lower.[18]

The aggregation of stability observations over a number of crops also presents problems. Data is given later in the study showing wide variations in the price stability of a number of fresh fruits and vegetables. Crop diversification is generally recommended to farmers as

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[16]Kisgruber, L.N., Schuman, L.S., "The Usefulness of Aggregated Data in the Analysis of Farm Income Variability and Resource Allocation", Journal of Farm Economics, 45:590, Aug. 1963.

[17]Schultz, T.W., Agriculture in an Unstable Economy, (New York: McGraw-Hill Co., Inc.), 1945, p. 213.

[18]Ibid, p. 213.

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[18]Ibid, p. 213.

one means of insuring against these price variations.[19]

The choice of statistical tool for measuring farm price variability is also of importance. Carter and Dean outlined six measures of variability applicable to the study of perishable crops.[20] Each of these consists of implicit assumptions about the pricing process and the decision-maker's reaction to instability. Variance as measured by the deviations from the long-term mean assumes that producers view any deviations from this average as unpredictable events. This does not seem plausible; producers are probably aware of long-term price trends and do not view all deviations from the average as unpredictable.[21] Other, more reasonable measures of price variations include the variance of observations about a regression line, deviations about a moving average, and deflated data. Measurement of market stability using

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[19]The case for diversification is often made on the premise that the mean variance of two prices each with the same variance is less than the variance of each separately unless the prices are perfectly correlated. See: Johnson, D.G., Forward Prices for Agriculture, (Chicago, Ill.: University of Chicago Press) 1947, p.50.

[20]Carter, H.O., Dean, G.W., "Income, Price and Yield Variability for Principal California Crops and Cropping Systems", Hilgardia, 30: 175-218, Oct. 1960.

[21]In an attempt to identify only that price variability which is unpredictable, Carter and Dean recommended the variate difference estimate of variance. This measure assumes times series data consist of two additive components: a systematic component with consecutive observations neither autocorrelated nor correlated with the systematic component. The latter is an estimate of unexpected variability and presumably the variance of importance for resource allocation; op. cit. Another estimate of unpredictable variability is given by the irregular component of the decomposition of time series data into trend, cyclical, seasonal and irregular movements. For an example of this applied to food prices, see: Gale, H.F., Seasonal Variation in Farm Food Prices and Price Spreads, U.S. Department of Agriculture, Miscellaneous Publication No. 840, Jan. 1961.

one means of insuring against these price variations.[19]

The choice of statistical tool for measuring farm price variability is also of importance. Carter and Dean outlined six measures of variability applicable to the study of perishable crops.[20] Each of these consists of implicit assumptions about the pricing process and the decision-maker's reaction to instability. Variance as measured by the deviations from the long-term mean assumes that producers view any deviations from this average as unpredictable events. This does not seem plausible; producers are probably aware of long-term price trends and do not view all deviations from the average as unpredictable.[21] Other, more reasonable measures of price variations include the variance of observations about a regression line, deviations about a moving average, and deflated data. Measurement of market stability using

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[19]The case for diversification is often made on the premise that the mean variance of two prices each with the same variance is less than the variance of each separately unless the prices are perfectly correlated. See: Johnson, D.G., Forward Prices for Agriculture, (Chicago, Ill.: University of Chicago Press) 1947, p.30.

[20]Carter, H.O., Dean, G.W., "Income, Price and Yield Variability for Principal California Crops and Cropping Systems", Hilgardia, 30: 175-218, Oct. 1960.

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first differences is common; the assumption is that the producer assumes the current price level equal to the previous level. All of these measures have limitations; none of them is entirely satisfactory in measuring unexpected price changes, the important variations for the study of vertical market coordination and resource allocation.

In perhaps the two most famous books dealing with agricultural market stability and emphasizing price instability in agriculture rather simple measures of variability are employed.[22] It is apparently recognized in both cases that market instability is only an approximation to the problem of resource allocation under conditions of risk and uncertainty. Among the measures of this problem employed by Johnson are the average absolute differences in farm prices, disregarding signs, and annual average first differences adjusted by mean prices. In this study a number of measures of farm price stability are employed.

The choice of time units for observing price variability will influence that variability appreciably. In the fresh fruit and vegetable industry prices change hourly and even a daily price is thus an average of considerable variability. For the purposes of this study, however, this very short-run price instability, though significant to the timing of harvest and sales by producers, is not of greatest interest. The concern here is with prices as mechanisms for coordinating vertical market relations in the fresh produce industry and as guides to resource allocation in production and marketing. Few adjustments can be made in the production sector to very short-run flucuations.

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[22]Schultz, T.W., Agriculture in an Unstable Economy, op. cit.; and Johnson, D.G., Forward Prices for Agriculture, op. cit.

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The choice of time over which it is reasonable to expect these adjustments is to some extent arbitrary, but in this study annual price variations are of principal concern. This is a qualification to the study, but data limitations preclude time periods shorter than the month and as will be shown monthly or seasonal price flucuations for fresh fruits and vegetables have not changed significantly in the post-war period.

Annual data is used in computing farm price variations in this study for another reason. It is the interaction of the marketing sector and the production sector and the implications for price stability in which we are interested. Structural changes in the marketing sector occur very slowly over time. The choice of annual data is a compromise between long-run data needed for viewing structural changes in the market sector and the shorter run problems of price variability such as the effectiveness of vertical market coordination.

Some studies of the correlates of farm price stability are instructive for this study which has as one of its purposes the separation of that portion of farm price instability for fresh fruits and vegetables due to supply characteristics — yield, weather, disease, and the like — and that portion due to variations in final demand or the intermediate demand of the marketing sector. In 1945 it was estimated three-fourths of annual variation in the harvested acreage of potatoes was associated with prices lagged one and two years.[23] Mumford estimated 60 percent of the variation in production of onions over the 1921-41 period was due to changes in onion acreage, 40 percent was due to yield variations;

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[23]Pubols, B.H., Klaman, S.B., "Farmers Response to Price in the Production of Potatoes, 1922-41, U.S. Department of Agriculture, Bureau of Agricultural Economics, 1945.

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also, 40 percent of annual changes in acreage was associated with prices lagged one year.[24] In an unpublished study, Fox estimated 79 percent of year-to-year variation in watermelon prices was associated with variations in quantitites marketed, disposable personal income and temperature.[25] And Hartkemeir estimated 91 percent of the variation in potato production over the 1896-1914 period was associated with price lagged one year, current temperature, and temperature lagged one year.[26]

These studies illustrate the traditional association of supply and final demand characteristics with farm price stability in the fresh fruit and vegetable industry. This requires a number of assumptions concerning the influence of the intervening marketing sector on price stability and these assumptions are the subject of this study. It is sufficient to note here that based on the literature of agricultural market stability there is little precedent for including the marketing sector as an influence on farm price stability.

Agricultural Production and Marketing Interaction: Review. A major premise of this study is that the marketing system for fresh fruits and vegetables is less than neutral to the process of matching farm supplies with consumption requirements. It not only performs in this capacity, in varying degrees of efficiency, but also in the process influences supplies and market demand as well as market prices at all levels of the distribution channel. This underlying rationale for this proposition is

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[24]Unpublished paper. Reported in: Shuffett, D.M., The Demand and Price Structure for Selected Vegetables, U.S. Department of Agriculture, Technical Bulletin No. 110, Dec. 1954, p. 33.

[25]Ibid. p. 25.

[26]Hartkemeir, H.P., The Supply Function for Agricultural Commodities, University of Missouri Studies, 1932.

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examined in greater detail in this section.

An early study of the interaction of firms in the fresh fruit and vegetable industry was made by W.R. Camp in 1924, the objectives of which included a determination of the extent to which methods of marketing farm products are factors in the rate of change of farm prices, an examination of the contribution of producer organization to farm price stabilization and a study of the general relation of market organization to the problem of price stabilization.[27] His conclusions predated the Highall-Jones thesis by 40 years but are not greatly different:

> "Stabilization. . .involves harmonizing the price changes of all items of costs with those of selling price. This would require that the whole scheme of business must act as a unit. The question is: How can it so act under a laizze faire system of control by the conflicting interests (of the market). . . Possibly there is no solution to the problem of controlling the price system as long as the right of price determination is left to the discretion of the opposing interests."[28]

In 1936 Frederick Waugh, writing on the future research orientation of fresh fruit and vegetable marketing, made a plea for greater study of the implications of marketing activities and costs for producer welfare.[29] More recently, Kenneth Ogren has discussed in detail the interaction of the production and marketing sectors for food and related this interaction to farm price stability in a number of ways. According to Ogren the marketing sector has the potential for contributing to more stable farm prices through the encouragement of production

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[27] Camp, W.R., "The Organization of Agriculture in Relation to the Problem of Price Stabilization", Journal of Political Economy, 32:282-314, 441-67, June and Aug. 1924.

[28] Ibid. p. 451.

[29] Waugh, F.V., "Urgent Needs for Research in Marketing Fruits and Vegetables", Journal of Farm Economics, 18:409, May 1936.

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specialization, the cultivation of national and international markets, and the reduction of regional price variations resulting from local surpluses and deficits.[30]

The premise of an interaction between the marketing and production sectors for food --the possibility that different forms of organization and behavior in the marketing system may alter the performance of farm markets -- has not generated appreciable empirical data as yet. In part this may be due to the difficulty in operationalizing the numerous hypothesized relations put forth by producers and industry representatives and in part, for the case of farm price stability, to the difficulty of specifying what the farm price is when it is so variable. Nevertheless, some investigators have attempted empirical investigation of the interaction, and their results are reviewed here. These studies may be divided into those dealing with the effect of market structure and market conduct on farm prices.

An example of the first type of study is provided by Jamison who likens the agricultural marketing order to a cartel form of economic organization and suggests this organization has been effective in reducing the farm price instability of California cling peaches over the 1925-65 period.[31] Another example of the study of market structure and farm price stability is concerned with price differentials for Florida fresh citrus sold by federated and non-federated sales organizations; no significant difference was reported between the prices

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[30] Ogren, K.E., "Marketing Costs, Farm Prices and the Farmer's Share", Policy for Commercial Agriculture, Joint Congressional Economic Committee, 1957, pp. 251-61.

[31] Jamison, J.A., "Marketing Orders, Cartels, and Cling Peaches: A Long-Run View" Food Research Institute Studies, 6:117-42, 1966.

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obtained under these alternative forms of market organization.[32] Another study of the comparative prices of fresh Texas citrus fruits handled by grower-owned marketing cooperatives and proprietary shippers indicated that while the cooperatives received lower shipping point prices than the other firms, the size of the shipping point marketing margin for cooperatives was such that producers received comparable prices from marketing through these two alternative forms of market organization.[33]

One other study of the effect of market organization on farm price stability can be mentioned, although it lacks empirical data. Studying the California lettuce industry over the 1922-29 period, Jones concluded the rapid expansion of the industry during those years was possible only by means of a change in enterprise organization of the shipping point markets and the trading relations of producers and shippers.[34] These changes in market organization, transferring the risk of market price fluctuations from the numerous small producers to the large and well-financed shippers by means of integrated arrangements, resulted in reducing the cost of market risk for both producers and shippers alike although the uncertainty of prices persisted. The results of this study and others above are not conclusive but suggest that the organization of the marketing sector, its enterprise combinations,

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[32] Hulse, F.E., Analysis of Returns and Practices of Florida Fresh Citrus Sales Organizations, U.S. Department of Agriculture, Marketing Research Report, No. 345, Aug. 1959, p. 41.

[33] Podany, J.C., et. al., Citrus Prices and Market Structure in the Lower Rio Grande Valley of Texas, U.S. Department of Agriculture, Economic Research Service, Marketing Research Report No. 748, April 1966. ...ding sales for the two kinds of buyers by size, grade, container, quality, and date of sale is also an instructive feature of the study. ...ream citrus products. Podany, J.C., et.

[34] Jones, W.O., "A Case Study of Risk Distribution", Journal of Farm Economics, 33:235-41, May 1951.

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functional forms, and variety of firms, may affect farm price levels and stability.

Studies of the influence of conduct in the food marketing sector on farm prices are rather more common than those dealing with market organization. There are a number of alternative distribution channels and exchange arrangements obtaining between the fresh fruit and vegetables shipping point markets and retail and wholesale buyers, and these have received considerable attention.[35] For example Hulse reported statistically significant differences in shipping point prices for Florida citrus products when the produce was sold to retailers as contrasted with wholesalers and through a broker as contrasted with direct from shipper to buyer.[36] And, a study of fresh tomato sales from the Rio Grande Valley of Texas indicated no statistically significant differences between prices paid to shippers by chainstore retail organizations and non-chain organizations.[37]

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[35] Most such studies are of the interaction of the marketing sector on the fresh produce shipping point price. This is one market removed from the producer of the products. But because the shipping point margin is relatively constant, these prices may be taken as the farm price less a constant marketing charge. Figure 1 in chapter 3 provides an outline of the alternative marketing channels for fresh fruits and vegetables.

[36] Hulse, F.E., op. cit., p. 34, 36.

[37] Podany, J.C., Farrish, R.O.P., Tomato Prices and Market Structure in the Lower Rio Grande Valley of Texas, U.S. Department of Agriculture, Economic Research Service, Marketing Research Report No. 588, Feb. 1963, p. 13. This study is a good example of the difficulty of measuring the effect of alternative marketing arrangements on farm prices of fresh fruits and vegetables. The finding, lacking statistical significance, was that chainstores paid somewhat higher prices for fresh tomatoes than other kinds of buyers, but the variance was large for both types of buyers. Price variability obscured the effects of the different buyers. A detailed description of the difficulty of matching sales for the two kinds of buyers by size, grade, container, quality, and date of sale is also an instructive feature of the study. The same problems are illustrated in the 1960-61 study of prices paid by kinds of buyers for Texas fresh citrus products: Podany, J.C., et. al., op. cit.

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[37] Podany, L.C., Parrish, B.C.P., Trends Prices and Market Structure in the Lower Rio Grande Valley of Texas, U.S. Department of Agriculture, Economic Research Service, Marketing Research Report No. 867, Jan. 1969, p. 13. This study is a good example of the difficulty of measuring the effect of alternative marketing arrangements on farm prices of fresh fruits and vegetables. The fact, leading statistical significance, was that chainstores paid somewhat higher prices for fresh tomatoes than other lines of buyers, but the variance was large for both types of buyers. Price variability obscured the effects of the different buyers. A detailed description of the difficulty of marketing sales for the two kinds of buyers by size, grade, container, quality, and date of sale is also an instructive feature of the study. The same problems are illustrated in the Lee-Cl study of prices paid by kinds of buyers for Texas fresh citrus products: Podany, L.C., et. al., op. cit.

There are three alternative sales terms for the shipper of fresh fruits and vegetables. These are the F.o.b. sale, for which the product and title are given to the buyer at the shipping point market, the delivered sale whereby the shipper retains title to the product until it reaches the buyer's warehouse, and the consignment sale. A comparison of prices under these alternative sales terms is somewhat difficult. For one thing, consignment selling is unique to the sale of fresh fruits and vegetables to wholesalers; it is not an alternative in selling to retailers direct. For another, different product qualities are sold under the alternatives. In order of seller preference the best quality normally is sold on F.o.b. terms, the next best lots are sold delivered, and the remainder is shipped to the consignment markets. This may not always hold, but is generally true and makes comparison of prices under the alternatives difficult.

From one study it was estimated the producer of U.S. No. 1 Size A potatoes in Hastings, Florida received $1.97 per 50 pound bag in New York in 1956 when selling F.o.b. shipping point, $1.94 when selling under delivered terms, and $1.56 when the crops were consigned to a wholesaler.[38] However, most such studies have shown no consistent statistical differences in producer prices under the three alternative exchange arrangements.[39] There are suggestions that another alternative,

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[38] Podany, J.C., Costs of Marketing Florida Potatoes, U.S. Department of Agriculture, Economic Research Service, Marketing Research Report No. 233, Aug. 1958, p. 10.

[39] For example, see: Podany, J.C., Farrish, R.O.P., op. cit. p. 16-17; Podany, J.C., et. al., op. cit., p. 25; Brunk, M.E. An Economic Study of Celery Marketing, Florida Agricultural Experiment Station Bulletin No. 445, July, 1948, p. 125; Showalter, R.K., Long Distance Marketing of Sweet Corn, Florida Agricultural Experiment Station Bulletin No. 638, Nov. 1961, pp. 16, 18, 23, 24.

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the auction market, returns prices higher than these alternatives, but only the highest quality produce is sold in these markets. One study indicated that market consistency may affect the returns from these alternative selling arrangements; a wide price difference was reported between those shippers selling consistently large volumes at the auction markets and those using the auctions for only occassional sales.[40]

The most recent testing of the interaction of marketing and production of fresh fruits and vegetables was undertaken in 1963. A study of the market behavior and prices paid by three large retail organizations in the California lettuce shipping point market indicated, with some qualifications, that the organizations paid either the average or higher prices than smaller competitors, that there was independence of the three oligopolists' buying behavior, and there was no evidence to support the hypothesis that the buyers could affect market prices to their advantage by withdrawing from the market at strategic times.[41] The theoretical framework, data, and statistical limitations of the study make it more interesting as a pioneer attempt to study the interaction of market parties than as conclusive evidence for its findings.

Finally, a study of the relationships between price and quantity variations in a vertical distribution channel was recently reported by Preston and Collins.[42] Market efficiency criteria were studied for a simulated model of a three-level distribution channel with many of the characteristics of the fresh fruit and vegetable marketing sector.

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[40]Hulse, F.E., op. cit., p. 37.

[41]Miklius, W., DeLoach, D.B., "Do Lettuce Buyers Exert Oligopsony Power?" Agricultural Economics Research, Oct. 1965, pp. 101-107.

[42]Preston, L.E., Collins, N.R., "The Analysis of Market Efficiency", Journal of Marketing Research, 3:154-62, May 1966.

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[41] Wilkins, W., Peterson, D.E., "Do Lettuce Buyers Exert Oligopsony Power?" American Journal Economics Research, Oct. 1965, pp. 209-217.

[42] Preston, L.E., Collins, N.R., "The Analysis of Market Efficiency", Journal of Marketing Research, 3:139-52, May 1966.

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Assumptions of the model included, among others, that supplier-growers did not know final demand and had no direct contact with retailers, the function of the intermediary-wholesalers was to match profitable supplier-offer and retailer-bid combinations, and a lack of forward contracts and preference among traders. The result of the simulated model was that the supplier-grower's price variability was significantly related to retail prices and quantities sold but not to wholesale quantities. Further, retail price variability was related to retail sales but not to wholesale quantities. The similarity of these results with the conclusions of this study is developed in chapter 5.

Organization of the Study. Chapter 2 provides evidence that farm price instability is a problem in the fresh fruit and vegetable industry. This consists of a discussion of the general framework used in examining the interaction of the industry production and marketing sectors, qualitative evidence of the magnitude of price variations in the industry, and an examination of the sources and manifestations of farm price instability in the industry. Chapter 3 is a description of the economic organization of the fresh fruit and vegetable marketing sector and an interpretation of its institutional structure in terms of adjustments to market risk and channel coordination. Chapter 4 examines the temporal and spatial aspects of farm price instability in the fresh fruit and vegetable industry. The analysis of channel conflict and coordination and their relation to the stability of farm prices is the subject of chapter 5. Chapter 6 consists of some tests of the interaction hypotheses developed earlier and a general examination of the contribution of the marketing sector to farm price stability. The conclusions

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assumptions of the model included, among others, that supplier-processors did not know final demand and had to direct output with reference to the function of the inter-industry-wholesalers was to reach profitable supplier-offer and retailer-bid combinations, and a lack of formal contracts and preferences among traders. The result of the simulated model was that the supplier-processors price variability was significantly related to retail prices and quantities sold but not to wholesale quantities. Further, retail price variability was related to retail sales but not to wholesale quantities. The similarity of these results with the conclusions of this study is developed in chapter 5.

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Chapter 2

FARM PRICE STABILITY AS A PROBLEM IN THE FRESH FRUIT AND VEGETABLE INDUSTRY: DEFINITION AND MEASUREMENT

The problem of price instability in the fresh fruit and vegetable industry is not a post-war development. Unstable farm prices have always contributed to the risk associated with producing these crops and the resource misallocation resulting from capital rationing and the failure of production to adjust to market requirements at acceptable prices. Over the years only the sources of this instability appear to have changed. In general prior to WW II this instability was associated with uncertainties in the production process such as weather and disease. In the post-war period, while interest did not decline in the production process as the source of farm market instability, there was an emphasis on the importance of fluctuations in demand and the non-farm economy for price stability on the farm. Firch has recently presented evidence that in the post-war period there has been a breaking down of the earlier relation between general business activity and the variance of farm income and that variations in farm output during this period have not been important sources of the variance of farm income.[43]

At a time when the conventional hypotheses of farm market instability are being questioned, it is significant that the National Commission on Food Marketing should propose in its conclusions a new source of farm market instability — the marketing sector. A key statement in

[43] Firch, R.S., "Stability of Farm Income in a Stabilizing Economy", Journal of Farm Economics, 46:323-40, May 1964. One of the motivations for this study was that the market variability of fresh fruits and vegetables did not decline appreciably at a time when the market stability for all farm products increased during the post-war period, according to Firch's findings.

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FARM MARKET INSTABILITY AS A PROBLEM IN THE POST-WAR ERA:
AND WAYS PROPOSED TO CURE: [illegible]

The problem of price instability in the fresh fruit and vegetable industry is not a post-war development. Unstable farm prices have always contributed to the risk associated with producing these crops and the resource misallocation resulting from capital reticence and the failure of production to adjust to market requirements at proper price prices. Over the years only the sources of this instability appear to have changed. In general prior to W W II this instability was associated with uncertainties in the production process such as weather and disease. In the post-war period, while interest did not decline in the production process as the source of farm market instability, there was an emphasis on the importance of fluctuations in demand and the non-farm economy for price stability on the farm. Fitch has recently presented evidence that in the post-war period there has been a breaking down of the earlier relation between general business activity and the variance of farm incomes and that variations in farm output during this period have not been important sources of the variance of farm income.[2]

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the Commission's report identifies instability as a problem of farm markets and the marketing sector as one source of the problem:

> "Farm markets lacking the firming influence of group action are volatile, often depressed, and highly sensitive to downward pressures originating further along in marketing channels."[44]

As stated, the excerpt combines the problems of level and stability of prices; but what is important is that both problems are traced to a common source. In this study the separation of the problem referred to into the component problems of level and stability of prices is assumed a useful, if not totally accurate, distinction.

Although the Commission did not make operational the perceived relation of the marketing system to farm price stability nor undertake to study the problem of farm market stability in depth, the problem did receive some attention, particularly in connection with the study of the fruit and vegetable industry. In this study, the problem of farm price instability and the analysis of the relevant interaction of the production and marketing sector is of central interest. Hence, it is intended to supplement a neglected area of study on the part of the Commission.

The General Relation of Farm Market Stability and the Marketing Sector. A distinction first needs to be drawn between behavior in the marketing sector with the intention of inducing farm price instability, for whatever reason, and behavior motivated by other factors having the same, unintended effect. As will be seen, price instability at one level of the market may be the result of profit-oriented conduct and trends at another level. Judgement of purposely-induced instability is not

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[44] Food from Farmer to Consumer, National Commission on Food Marketing, Washington, D.C., June 1966, p. 110.

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[44]Quoted from Farmer Is Coerced, National Commission on Food Marketing, Washington, D.C., June 1966, p. 110.

difficult; market behavior and trends should not be permitted which impose costs on others for which they are not compensated. But unintended price instability is less easy to judge; whether firms or market levels subjected to price instability which is the unintended result of conduct or trends at other market levels, should be compensated for the costs of the instability is a moot question. The distinction needs to be drawn not so much from the standpoint of market ethics but rather because it highlights one of the areas in which legal and economic problems combine. Market price stability is an economic problem relevant to market coordination and the efficiency of resource allocation in production and marketing; the interaction of two market levels and the resulting social performance is a legal matter. But there is no law, as is the case for a number of problems connected with the level of prices and market interaction, prohibiting market behavior which is destabilizing to buyers or suppliers elsewhere in the market channel. For the problem of price levels, economic thought and the law are both relevant; for the problems of price stability the law seems to have developed a blind spot, although economists should be no less interested.

For the most part this study is concerned with that market behavior and those trends in market structure which, while affecting the stability of farm prices, do not have that purpose as their referent. Consequently, the relationships developed between the market sector and farm price stability have no value content. The study is of little aid in proving either the positive contributions of the market sector to farm price stability nor the exploitation of the producer of fresh fruits and vegetables by the marketing sector. Instead the relationships

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developed are intended only to gain a greater understanding of the interaction of a marketing sector with a farm production sector and to appraise the net contribution of the former to the price stability of the latter. This alone is of value in examining present and prospective marketing trends and arrangements.

In its final report the National Commission on Food Marketing identified five general problem areas of the fresh fruit and vegetable marketing sector. These were: (1) product perishability; (2) producer market power; (3) direct shipping point sales; (4) shipper-grower trading relations; and (5) retail pricing and merchandising policies. The contention of the present study is that each of these problems has a common denominator of farm price instability. The Commission's appraisal of the problem areas and their relation to farm price stability is reviewed below.

With respect to the perishability of fresh fruits and vegetables, the Commission reported:

> "The marketing of fresh produce is dominated by one central theme — a pervading sense of urgency because of the perishable character of the products. Huge volumes must be moved to market in brief periods. Supplies are highly variable, not only within a season but also from year to year. Both the vagaries of weather and the uncoordinated production of many growers may operate to bring about sudden shortages or unanticipated surpluses. The industry appears better geared to meet the physical challenge of distribution than to deal with the economic problems of marketing fresh fruits and vegetables."[45]

In this excerpt a great deal of the market instability appears to be associated with variations in output of the crops. There is no explicit reference to market instability ". . .originating further along in the marketing channels.". But there is the indication this market

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instability is the product of a lack of coordination in the production process, not an inherent production characteristic, and a distinction is drawn between problems in physical distribution and marketing problems. The inference is that the marketing system performs adequately the task of physically distributing the product from production to consumers, according to the marketing urgency of the product, but that the result of this is not altogether economically satisfactory. The industry marketing characteristics imposed by this perishability and urgency, in the form of risk-accommodating market instruments, and their economic implications for farm price stability are taken up later in the study.

The Commission's concern with the construct, economic market power, was also related to the problem of price variability. Market power was defined as ". . .the ability to influence prices or other terms of trade in a way favorable to the business firm.".[46] In its studies of the fresh fruit and vegetable industry the Commission's concern with this construct centered on the organization of the producers' selling effort, the competition of assemblers for producer supplies, and the transference of marketing costs between the production and marketing sectors. For this particular industry, the Commission stated:

> "Unorganized farmers have no positive market power at all and depend upon competition among buyers to obtain the full value that market conditions justify for their products. Especially when products must be sold to buyers in a local market and the local buyers are few, competition may not be fully effective in achieving the result."[47]

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[46] Ibid., p. 95.

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[46] Ibid., p. 92.

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"Unorganized and unsupported farmers have had to depend upon the competitive bidding of buyers to receive the full market value for their products. If costs rose in the marketing system, the farm price usually was depressed until reduced production in relation to demand lifted prices at all levels of distribution."[48]

In these excerpts the Commission related the stability of fresh fruit and vegetable farm prices to not only the competition among buyers but also to the level of marketing costs. Both these propositions are examined later in the study. Here it is sufficient to note the model of the industry pricing process employed by the Commission. Producers were viewed as pure competitors having little influence of consequence over the prices of products they produce; indeed the inference is that the behavior and costs at other levels of the market determine the producer's price, at least in the short-run. Therein lies the basic premise of the Commission's pricing model on which its conclusions are based. The producer makes a number of important decisions in the channel, among them the total quantity produced and marketed, yet has no influence over the price at which the product is sold. Coordination of the production and marketing sectors suffers accordingly.

The Commission's model of the industry pricing process and the market power of producers was gained from such statements as the following which is taken from the transcript of a hearing in Texas:

Mr. Raitt (counsel): My next line of inquiry concerns the producers' bargaining power. You are both a producer and packer (of fresh vegetables), is that right?

Mr. Shimotsu: Yes, I grow my own stuff and pack it.

Mr. Raitt: Do you operate these two firms as separate enterprises?

Mr. Shimotsu: Yes, sir.

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[48] Ibid., p. 102.

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Mr. Raitt: Suppose you get into a price squeeze in a particular commodity. Which business gets to make the profit? Which hat do you put on?

Mr. Shimotsu: The farm makes no profit. The packing business makes the profit.

Mr. Raitt: Even you, with total control over both ends of it, you let the packing business make the profit?

Mr. Shimotsu: The packing charge is established and if there is anything left it goes to the farm.[49]

For this man, of course, the incidence of market costs and risks is an arbitrary allocation since he operates in the production and marketing sectors simultaneously. But the same attitude prevailed throughout the industry for the non-integrated sectors of the market; the production sector was viewed by the Commission as passive to the pricing process and as the residual recipient of returns after marketing costs were paid.

It is not a simple model nor merely an agrarian polemic. The remainder of this study is concerned with developing the dimensions of the model apparently used by the Commission and underlying its findings. Appropriately defined the model is of considerable value in conceptualizing the contribution of the marketing sector to the stability of farm prices. More importantly, the model highlights problems of market coordination in the fresh produce industry; the need for market coordination is underscored by the difficulty producers have in adjusting resource allocation to an unstable price largely determined in an imperfectly competitive marketing system.

The Commission summarized its findings regarding producer market power, the importance of product perishability, and the economic

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[49]NCFM, McAllen, Texas Hearing, p. 342.

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position of the fresh fruit and vegetable producer as follows:

> "Growers are in a weak bargaining position when selling their crops to shipping point firms. An individual grower has to deal with one of the limited number of shippers in his area -- and each of these is likely to be larger than the grower. Further, the grower is generally possessor of a perishable product that must be marketed within a short time interval. Shippers are thus able to look at prospective market conditions and then make price offers to growers. This places the grower in the position of residual claimant in the bargaining process."[50]

The statement is tacit attribution of the producer's lack of market power to the urgency of crop marketing but more importantly to the conduct of the first market for fresh fruits and vegetables.

The remaining areas of fresh fruit and vegetable markets singled out by the Commission for concern were the trend toward direct shipping point marketing, the quality of the producer-shipper trading relation, and retail pricing policies. The industry trend toward direct marketing, paralleled in other food industries such as meat packing, was noted as having two effects relevant to the stability of farm prices: a change in the distribution channels employed for marketing fresh produce and a decline in the role of the wholesale terminal markets, the traditional price-making markets for the industry. According to the Commission:

> "With the growth of selling at shipping points, the place where prices are determined has been relocated. Prices are now established in scattered areas where particular products or product groups are harvested, packed, and marketed. Shipping point selling tends to make price discovery more obscure."[51]

The Commission did not undertake studies explicitly for determing the effect on the pricing process of this fundamental market change from

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[50] Food from Farmer to Consumer, op. cit., p. 50.

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> "Growers are in a weak bargaining position when selling their crops to assembling packers. An individual grower has to deal with one of the largest buyers of citrus in this area -- and each of these is likely to be larger than the grower. Further, the grower is generally possessor of a perishable product that must be marketed within a short time interval. Shippers are thus able to look at prospective market conditions and then make price offers to growers. This places the grower in the position of residual claimant in the bargaining process."[1]

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what could be called a centralized pricing process to a decentralized market system. Its opinion as reflected in the above can be inferred to be that not only is the price more variable in the decentralized system but, equally important for the coordination of production and harvest with the market, it is more difficult for the producer to know what the price is or to what price he is adjusting his resources. This is not just a problem of communication among decentralized markets but in addition the result of substituting a complex, national pricing surface for a simple, centralized price system.

The concern of the Commission with the fresh fruit and vegetable first market, or shipping point market, centered around the method of exchange between shippers and producers and the effect of the integration of marketing and production functions. A common arrangement, unparalleled in other food industries, is for the shipper to harvest, pack and market the producers' crops for a fixed fee, extracting the fee from the selling price of the crop and remitting the remainder to the producer. This form of arrangement was felt to not only perpetuate the producer's position of residual claimant in the marketing system but was also viewed as the source of different profit-maximizing output and pricing levels of producers and their marketing agents. Regarding these conflicts and risk-accommodating marketing arrangements the Commission concluded:

> "Under some agreements, the grower lets the shipper handle his crop for a fee, with the grower bearing all marketing risks. These arrangements are often fostered by shipper financing of under-capitalized growers. Agency sales arrangements commonly are made by shippers who also market products that they own outright; such arrangements thus are fraught with potential conflicts of interest."[52]

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This conflict of interest involving the kind of exchange between the producer and the first market and the integration of the production and marketing sectors was of central interest to the Commission. While not explicitly used in this way in the final reports, it forms a fundamental basis for the appraisal of the interaction of the production and marketing sectors. Because of product perishability, it is essential that the pricing and output levels of the production and marketing sectors coincide; storage of most fruits and vegetables is only a short-term possibility at best. But a conflict in these prices and outputs, identified by the Commission as caused by the method of compensating shippers for their marketing services, would be a serious barrier to market coordination. The Commission did not pursue the economic implications for such a conflict, here suggested to be farm price instability, but merely noted the existence of potential differences in producer and shipper desired output levels:

> "Many (market orders and agreements) have been inhibited in their operations by conflicts between individual grower interest in high volume and the group goals of benefits from lower volumes and orderly product flow. Conflicts also arise because shippers favor high volume rather than restricted marketings."[53]

Shipper integration into production in the fresh fruit and vegetable industry was viewed by the Commission with concern for its influence on the future of the non-integrated producer, total output and the competition of shippers for supplies. The Commission felt that this form of integration:

> ". . .has injected new capital into farming and hence has served to maintain or increase production. The effect has been to reduce or hold down prices and to intensify (selling) competition in agriculture. In some instances, the bargaining power of farmers may have been reduced by buyers' access to

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captive production."[54]

Specifically for the fresh fruit and vegetable industry, the Commission reported, "Shippers have also gained bargaining leverage by growing some of their supplies. This puts added pressure on independent growers".[55]

The final area of concern to the Commission regarding the marketing of fresh fruits and vegetables was the number and variety of retail pricing policies and their implications for the relationships of prices in the marketing channel. The subject is covered more thoroughly in a later chapter; suffice to say here that the perceived problem is one of price flexibility and inflexibility under a number of alternative retail pricing stratagies. According to the Commission's report:

> "Mass merchandising has also induced inflexibility into the pricing system for fresh fruits and vegetables. Consumer one-stop shopping reduces pressure on supermarkets to establish retail prices which closely follow wholesale price changes for these products. This insensitivity of retail prices makes it difficult to clear the market of variable supplies without major changes in prices at shipping points."[56]

This hypothesis of market interaction, whereby price stickiness at one market level is seen as responsible for price variations at another, is interesting, and it is unfortunate it was not pursued further by the Commission. Because it is so closely related to the stability of prices it deserves treatment in this study.

These, then, are the five problem areas developed by the Commission in relation to the fresh fruit and vegetable industry. That they all have relevance to the price level problem of market interaction is clear; it is also true they identify areas of interaction between the

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[54] Ibid. p. 101.

[55] Ibid. p. 50.

[56] Ibid. p. 50.

competitive practices."[54]

Specifically for the fresh fruit and vegetable industry, the Commission reported, "Shippers have also gained bargaining leverage by growing some of their supplies. This puts added pressure on independent growers".[55]

The final area of concern to the Commission regarding the marketing of fresh fruits and vegetables was the number and variety of retail pricing policies and their implications for the relationships of prices in the marketing channel. The subject is covered more thoroughly in a later chapter; suffice to say here that the perceived problem is one of price flexibility and inflexibility under a number of alternative retail pricing strategies. According to the Commission's report:

> "Mass merchandising has also induced inflexibility into the pricing system for fresh fruits and vegetables. Consumer one-stop shopping reduces pressure on supermarkets to establish retail prices which closely follow wholesale price changes for these products. This insensitivity of retail prices makes it difficult to clear the market of variable supplies without major changes in prices at shopping points."[56]

This hypothesis of market interaction, whereby price stickiness at one market level is seen as responsible for price variations at another, is interesting, and it is unfortunate it was not pursued further by the Commission. Because it is so closely related to the stability of prices it deserves treatment in this study.

These, then, are the five problem areas developed by the Commission in relation to the fresh fruit and vegetable industry. That they all have relevance to the price level problem of market interaction is clear; it is also true that identify areas of interaction between the

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[54] Ibid. p. 101.

[55] Ibid. p. 70.

[56] Ibid. p. 50.

marketing and production sector having to do with price stability or instability at the farm level. This is the sense in which the problems are viewed here.

Farm Price Instability in the Fresh Produce Industry. The National Commission on Food Marketing placed greater emphasis on the question of what effect the marketing sector was having on the level of farm prices than their stability. Nevertheless, the Commission gathered considerable evidence relating to farm price stability as a problem in this industry. Quantitative estimates of this instability and its manifestations are given later in the study. But at this point it is instructive to examine how the fresh fruit and vegetable producer views this market instability, his estimates of its seriousness, its sources and its consequences.

A producer of lettuce in California had the following to say about the volatility of his market:

> "As I said a minute ago, the tremendous fluctuation in the market, the lettuce can be absolutely nothing per acre at one given time. It can get up to as much as $2,000 an acre cash value. I have seen celery go as high as $5,000 and $6,000 an acre in extreme cases, but by the same token, I have seen it where all you could get out of it was packing charges and not a cent back to the ranch."[57]

This producer of lettuce and celery was also a shipper of these crops, and his remarks are directed to the annual price variations. Intra-seasonal price variations are probably even greater than the annual variations, though subject to predictable seasonal components to some extent. Another witness testified, ". . .the price of iceberg lettuce fluctuates terrifically. The value of a carload of lettuce shipped out

[57]NCFM San Francisco Hearing, p. 702.

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of Salinas, California takes seven days to get to New York. The value might change $1,000 in that seven days and maybe more, either up or down.".[58]

While the industry is in agreement that price stability is more of a problem in the fresh produce industry than in other food sectors, representatives are by no means certain of its source. They associate much of the fluctuation with changes in output and unexpected changes in weather; but there is the feeling that market price instability cannot always be explained by these. For example, the following type of exchange is not uncommon:

Representative Purcell: Do you feel then, that the basic problem for this (price and income problem) that is occuring right now is general over-production?

Mr. Chinn: Well, that is what they tell us. I have other theories. I have no proof so I don't like to say it. But, gentlemen, it just doesn't seem right to me when a market on anything could be $3.00 a crate or something, and in one month's time or in three weeks time it is down to nothing. We are not asking for $3.00 a crate continuously. We are not asking for anything as a continuous price, either. But a price of $2.00 or $2.25 in the market, which we consider is not an excessive price, if we have that kind of a price continuously we are better off than with the fluctuations."[59]

Mr. Chinn's complaint was that these fluctuations originate in the market sector; he is right when he says he has no proof, but his years of experience in the market make his failure to associate all price variations with changes in output significant.

Other witnesses believing that the market sector is partially responsible for the farm price variations attempted to be more specific. One expressed the following view relating farm price variations to the

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[58] Ibid., p. 700.

[59] NCFM McAllen, Texas Hearing, p. 647.

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[54] Hall, p. 700.

[55] Chinn Houlton, Texas Hearing, p. 647.

market searching efforts of shippers:

> "In our business, the market prices oftentimes change rapidly by a very small over-supply or a very small shortage. One shipper may only have one car of produce unsold but he may send a telegram to 20 potential customers and quote a cheap price and demoralize the situation for all shippers."[60]

Interesting as this theory of market communication may be, its significance for purposes here is not in its accuracy but in the perceived source of the instability, the marketing sector. A number of other perceived relations between market stability and the market sector could be reviewed here; for all of them their significance lies not in the accuracy of the relation but rather in the fact that changes in output do not fully explain all of the variations to which producer prices are subjected.

For purposes of explaining farm price variations seemingly unrelated to the state of market supplies, it is natural for producers of fresh fruits and vegetables to look to the marketing sector as a source of this instability. Consumer demand variations are mostly seasonal, predictable, and well known by producers. The marketing process is less well understood and the only other location in the marketing channel which might serve as the source of price instability. But this residual research technique is not helpful to producers in identifying exactly what it is in the marketing sector which is responsible for the price variations. Consequently, investigators receive a plethora of hypotheses regarding these relations but a dearth of empirical evidence. Periodically, at least in the agricultural industries, it is expected an investigation will bridge this gap between hypotheses and acceptable evidence. One of the reasons this does not happen is that the marketing

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[60] Ibid. p. 601.

market searching efforts of shippers:

> "In our business, the market prices of potatoes change rapidly by a very small oversupply or a very small shortage. One shipper may only have one car of produce which he may send a telegram to 20 potential customers and quote a cheap price and determine the situation for all shippers."[2]

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sector, its structure, institutions, and performance is multi-dimensional and far more complex than producers admit. Another reason, and a motivating force behind this study, is the pragmatic nature of marketing thought and research buttressed by the lack of a framework of analysis for studying the interaction of a marketing system and a production sector. The minimum objective of this study was, if not to provide this framework, to indicate its need.

Aspects, Sources and Manifestations of Agricultural Price Instability. It is necessary to draw a distinction between price certainty and stability. While market stability implies certainty, the reverse need not be the case. D. Gale Johnson has made the point that if the variation of market prices were known with accuracy, certainty without stability would be a sufficient condition for the rational organization of resources.[61] That is to say, the efficient allocation of resources in production and marketing and the coordination of these two sectors requires only that the average price resulting from the resource allocation be known beforehand and regardless of its variation. In practice, of course, resource allocation involves both an estimate of the average price and its expected variation. So sensitive are some resources to risk and uncertainty that their allocation differs for the same expected prices if price variances differ.

While vertical market coordination is of major interest in this study, resource allocation in production is the principal problem resulting from industry farm price instability. Several aspects of resource allocation in the production and marketing of fresh fruits

[61] Johnson, D.G., Forward Prices for Agriculture, (Chicago, Ill.: University of Chicago Press) 1947, p. 201.

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Assets, Sources and Methodology of Ameliorating Price Instability.

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[1] Johnson, D.G., Forward Pricing for Agriculture, (Chicago, Ill.: University of Chicago Press) 1947, p. 21.

and vegetables are considered. There is first of all the combination of planting and cultivation decisions on the part of producers which are instrumental in determining the size of the crop and product quality. For the producer there are also product and enterprise decisions in resource allocation; product diversification and specialization are examples of the former, the assumption of marketing functions such as grading, packing and selling are examples of the latter. The harvest decision is another opportunity for the adjustment of resources on the part of the producer of fresh fruit and vegetables. With the exception of the latter, there are analogous factor, product and enterprise decisions in resource allocation in the marketing sector for these products. For those decisions not predetermined by integration, product prices are relied upon to coordinate vertical marketing efforts and rationalize the allocation of resources. To the extent these prices do not guide these decisions, either because they are too unstable or otherwise unpredictable, there is a problem of coordination and resource allocation. These are the costs of market price variability.

The source of farm market instability is more difficult to define than its economic implications for resource allocation. For the purposes of this study, two kinds of sources were defined: supply-induced instability and demand-induced instability. The latter includes farm price instability originating either in the market sector or in final, consumer demand. Market influences represented in the supply-induced hypothesis of market instability include yields, weather, total supply, biological influences and other environmental factors affecting supply. One such additional factor might be producer price expectations which, combined with appropriate market elasticities, result in the cobweb

combined with supposedly inelastic market elasticities, result in the common hypothesis of market instability include yields, weather, total supply, biological influences and other environmental factors affecting supply. One such additional factor might be producer price expectations which are instrumental in determining the size of the crop and product quality. For the producer there are also product and enterprise decisions in resource allocation; product differentiation and diversification are examples of the former, the exemption of marketing functions such as grading, packing and selling are examples of the latter. The harvest decision is another opportunity for the adjustment of resources on the part of the producer of fresh fruit and vegetables. With the exception of the latter, there are analogous factor, product and enterprise decisions in resource allocation in the marketing sector for those products. For those decisions not predetermined by interaction, product prices are relied upon to coordinate vertical marketing efforts and rationalize the allocation of resources. To the extent these prices do not guide these decisions, either because they are too variable or otherwise unpredictable, there is a problem of coordination and resource allocation. These are the costs of market price variability.

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effect of market price instability.

The farm price elasticity of demand bridges the gap between the two sources of price instability. As a derived demand from forward markets, the elasticity of demand at farm level can be viewed as a product of the demand sector. On the other hand this elasticity translates into price variability only with variations in the supply function. These reflect changes in technology, yields, weather and the other parameters of agricultural supply functions. Hence, farm price variations have dual sources. Under these circumstances it appears preferable to treat farm price elasticity as a source of instability separate from the supply and demand-induced hypotheses.

Price instability is at one and the same time a source of some producer problems and a manifestation of others. For example, farm price instability reflects inherent biological and climatological risks involved in the production of fresh fruits and vegetables. In turn, that instability may produce other problems or manifestations; because of the risk and uncertainty producers may find their capital sources limited, integrated structures may develop for the purpose of either sharing the risk among more producers or reducing it. Conceivably some institutional manifestations or market risk may magnify or augment that risk. The integration of production and marketing, for example, undertaken for the purpose of risk-sharing may increase the risk to which those not entering into the integration are subjected. Or, certain risk-accommodating market institutions may change the incidence of risk in the marketplace. These are of interest in this study for their relation to price stability and market risk.

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degree rather than kind. Sources of farm price instability will be described and studied as internal and external to the producer's decision making process. Variations in crop yields and output due to weather, disease and the like which are if not controlled by the producer at least predictable to some extent will be termed internal sources of instability. Other considerations such as the industry's positioning of assets, enterprise combination and the organization of markets will be described as external sources of market instability. This is merely a conceptual distinction, a difference in degree, because just as there may be internal and external sources of capital rationing there may also be elements of the market organization internal to the producer's resource allocation decisions. The grower-owned marketing cooperative is one such element of market organization.

In this study major attention is given two classes of manifestations of farm price instability in the fresh fruit and vegetable industry. The first of these is the implications of the instability for short-run resource allocation in the production and marketing of these crops. Principal among these is the crop abandonment prevalent in the production of fresh produce. The second class of manifestations, the ones of greatest interest to this study, are the market institutions which have evolved in the industry for dealing with the market risk associated with fresh fruits and vegetable production and marketing. These include unique exchange arrangements, flexible enterprise combinations, the maintenance of several marketing alternatives throughout the distribution channel, and a variety of integrated structures.

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another guide to resource allocation for the price mechanism; (2) production costs resulting from mistaken expectations and the failure of producers to recognize all possible enterprise combinations; and (3) micro-costs such as capital rationing, asset fixity, and the like. In his 1947 book D.G. Johnson argued short-run price instability was a major cause of resource misallocation within agriculture while long-run instability was the cause of capital rationing.[62] Similarly Kling found that while average income over time is of greater significance to producers than the variability about the average, short-run losses due to price and income variation may be severe for perishable crops and necessitate costly adjustments; furthermore, credit needs and terms are affected by income and price variability for fresh fruits and vegetables.[63] An example of the capital rationing in the production and marketing of these crops was provided by a witness at a hearing:

> "There is no source for financing vegetable coops except short-term bank loans of one year and very small loans. Farmers are hard pressed for operating capital and creditors are reluctant to lend a farmer additional money for stock in a vegetable (cooperative) association. Houston Bank for Cooperatives states that no vegetable cooperative in the State of Texas has succeeded. Lending agencies do not consider vegetable coop associations a good risk because of the wide fluctuations in the market."[64]

The requirements of market prices in the modern market economy have multiplied, and this is of fundamental importance to the problems of market coordination and resource allocation. These requirements may be classified, though not mutually exclusively, into three kinds:

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[62] Ibid. p. 200.

[63] Kling, W., "Determination of Relative Risks Involved in Growing Truck Crops", Journal of Farm Economics, 24: 695-98, 1942.

[64] NCFM McAllen Texas Hearing, p. 378.

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A number of authors have argued the price mechanism is asked to perform too many functions in today's complex marketing system. Schultz has suggested the appropriate role of market prices is to guide resources in the production and trade of agricultural products, but he feels the price system will not be permitted to perform these two functions efficiently until an alternative mechanism is found for stabilizing producer incomes.[65] He then asks whether price can satisfactorily and simultaneously perform these two functions since resource allocation in production is a long-range role of price while trade decisions are of a short-run nature:

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> apart of the network of prices connecting the decision to utilize resources for production and the decision to utilize products for consumption."[66]

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> ". . .conditions have been such that the pricing system has not been able to guide the allocative process in production efficiently and at the same time keep farm products moving into foreign and domestic markets at a rate consistent with short-run developments."[67]

Breimyer has suggested there is a difference in kind between the economic equilibrium of production and final consumption and that of market traders.[68] The latter contains an element of price negotiation not found in the former equilibrium, and this difference is relevant to the role of prices in agricultural markets. If the production-consumption equilibrium lies in a different logic system than the market trading equilibrium, as Breimyer suggests, then the role of price is changed accordingly from a resource allocation guide reflecting consumer demand to a performance criteria reflecting buyers' and sellers' skills in negotiation. It is by no means certain that a price resulting from negotiation between buyers and sellers in the marketing process will also serve as an adequate guide for market coordination and the allocation of resources in production. The negotiated price, for one thing, is highly volatile; for another thing, the goals and preferences

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[66] Ibid. p. 75.

[67] Ibid.

[68] Breimyer, H.F., Markets, Market Structure and the Institutional Organization of Agriculture, lectures delevered at Texas A&M College, College Station, Texas, Mar. 11-13, 1963. The distinction sought is between the production activities in marketing and the marketing sector as the abode of the direction-giving function of production. See: Breimyer, H.F., "The Law and the Market in Perspective", in The Law and the Market, D.C. Dahl, ed., University of Minnesota Agricultural Experiment Station, Miscellaneous Report 75, Sept. 1966, p. 4.

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of the market system for product output and quality are intermixed with those of the consumer in the negotiated price. That is to say, the marketing system not only transmits consumer demand to producers but also influences that demand and its communication.

A premise of this study is that the role of price and its applicability for coordinating the production and marketing of fresh fruits and vegetables is to some extent a function of the interdependence of the industry marketing sectors and their interaction, especially the interaction of the production sector with the marketing sector. If this interaction is observed to substitute for the directive role of prices in market coordination and resource allocation, as appears likely, the importance of prices as guides to these processes may fall with little consequence for the efficiency of the production process. On the other hand if there are trends in market organization which have the effect of contributing to farm price instability, which also appears likely, then the marketing sector bears a portion of the responsibility for the lack of vertical market coordination. For public policy purposes it is of importance to investigate the accuracy of these premises and the implications for industry resource allocation.[69]

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[69] A related subject, neglected here, is the association between market competition and the role of price. On examining a local assembly market for tomatoes in Texas, one study pronounced the market competitive but warned this

> ". . .does not imply that prices for tomatoes are efficient guides to producers in directing production. Indeed, the wide price variation over the course of the season makes it highly doubtful that tomato prices are useful guides in deciding whether or not to plant tomatoes."

Bodany, J.C., Farrish, R.O.P., Tomato Prices and Market Structure in the Lower Rio Grande Valley of Texas, U.S. Department of Agriculture, Economic Research Service, Marketing Research Report No. 588, Feb. 1963, p. 7.

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A premise of this study is that the role of price and its capability for coordinating the production and marketing of fresh fruits and vegetables is to some extent a function of the interdependence of the industry marketing sectors and their interaction, especially the interaction of the production sector with the marketing sector. If this interaction is observed to substitute for the directive role of prices in market coordination and resource allocation, as appears likely, the importance of prices as guides to these processes may fall with little consequence for the efficiency of the production process. On the other hand if there are trends in market organization which have the effect of contributing to farm price instability, which also appears likely, then the marketing sector bears a portion of the responsibility for the lack of vertical market coordination. For public policy purposes it is of importance to investigate the accuracy of these premises and the implications for industry resource allocation.[67]

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[67] A related subject, neglected here, is the association between market competition and the role of price. On examining a local assembly market for tomatoes in Texas, one study pronounced the market competitive but warned this

> ". . .does not imply that prices for tomatoes are efficient guides to producers in directing production. Indeed, the wide price variation over the course of the season makes it highly doubtful that tomato prices are useful guides in deciding whether or not to plant tomatoes."

Poduny, J.C., Farnish, R.O.P., Tomato Prices and Market Structure in the Lower Rio Grande Valley of Texas, U.S. Department of Agriculture, Economic Research Service, Marketing Research Report No. 392, Feb. 1963, p. 7.

Schultz posed three questions in his examination of agricultural market stability: (1) does the system have the capacity, inherent or otherwise, for achieving stability and returning to that solution if disrupted; (2) what will be the magnitude of market movements before stabilizing forces set in; and (3) what are the costs of market movements toward and from the stable solutions?[70]

The markets' automatism, whether or not there is a stable solution and whether or not the market has within itself the capacity for returning to this solution, points out a distinction between economic equilibrium and trading stability. The necessary condition for trading stability is that no firm or consumer having the ability to do so wishes to change the current output and pricing levels. This is a weaker condition than those of the first and second order marginal conditions; and it has the desirable quality that no market motives are predetermined. A stable trading equilibrium is consistent with economic behavior not motivated by profit maximization. As will be shown, sales maximizing behavior is typical of certain market sectors in the fresh fruit and vegetable industry; but the problem deriving thereof is not the lack of a stable solution under these conditions, but rather the fact that the resulting price and output levels are unsatisfactory to others in the market channel.

Whether or not a marketing and production system such as that represented by the fresh fruit and vegetable distribution channel has any inherent capacity for reaching a stable trading solution depends to a large extent on the existence of congruity of market goals and tactics among the market parties. This congruity, in turn, is a

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[70] Ibid., cit., p. 65.

a function of the market organization of the distribution channel, its economic institutions and coordinating instruments. It will be argued in the study that certain institutions in the fresh fruit and vegetable marketing channel promote dissonance of economic behavior and goals among the various market levels and that the effect of this is destabilizing to farm prices. These institutional problems are not inherent, although the risk-basis of the institutions is in the nature of the product. But other institutions are conceivable which promote the congruity of marketing efforts imposed by the interdependence of market levels in this industry.

In regard to the other two questions posed by Schultz, the magnitude of farm price variations is the subject of chapters 4 and 6. These are considerably greater for fresh fruits and vegetables than for other food products, and, as noted at the beginning of the chapter, do not appear to have declined in the post-war period as was the case with price variations for other crops. Both this question and the first, the automatism of the market, depend to a large extent on the presumed source of the market instability. If by market stability is meant the variability of output, there are factors promoting the stability of the market and reducing output variations. These include the declining numbers of producers, the withdrawal of marginal land and concentration of production in those areas best suited for the production of these crops, and improved control over the environment with the use of pesticides and weather-modifying techniques. But these improvements in control of output without accompanying declines in price variability only serve to shift attention from supply as the source of the instability to other sources.

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The final question posed by Schultz, the costs of market instability, is emphasized in this study. The general kinds of costs are summarized above and elaborated on throughout the study. These costs must be the final justification for this study. But it should not be assumed that there are only negative aspects of market price instability. The dilemma encountered in studying price stability is that it is not universally desired by all. It does not affect all firms equally; nor can all firms make equal adjustments to market price instability. Further, there is a fine line between market stability and rigidity. For an efficient market, relative stability is desirable for efficient communication and resource allocation. But flexibility in response to demand and cost changes is of equal importance.

These problems need not preclude the study of price stability, but should serve to warn against hasty policy prescriptions in the face of variable market prices. It is difficult to specify a stability which reduces risk for all producers and traders or to separate the benefits of risk reduction from declining price variability benefiting all from rigidities benefiting only a few.[71] What might be hoped for is a system where prices and costs are readily transmitted but random instability or variations for which some firms cannot adjust resources — or this resource adjustment is costly — are at a minimum.

Always it must be kept in mind throughout this study that price variability is not viewed by all in the industry as undesirable. The view of the National Agricultural Advisory Commission that ". . .in the constant fluctuation of day-to-day markets, farmers' inability to

[71]Preston, L.E., Collins, N.R., "The Analysis of Market Efficiency", Journal of Market Research, 3:156, May 1966.

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defend their prices leads to more frequent losses than gains."[72] is not shared by all in the fresh fruit and vegetable industry. Many have made admirable adjustments to the persistence of price fluctuations, although this has been at the expense of a change in enterprise combination. The following view of a potato producer in California might be typical of a large number of people in the industry:

> "Those of us who have been in the potato industry over a period of years remember that we must average our income. We do not take any one particular year and say this is it. We, for instance, had four bad ones. This (1965) is the second fairly good one that we have had. Over a period of years, for the grower who watches his production, for the grower who does not jump in and out, but remains consistent in his acreage that he plants, he will average out very well. . ."[73]

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[72] Farm Policy in the Years Ahead, A Report of the National Agricultural Advisory Committee, Washington, D.C., Nov. 1964, p. 5.

[73] NCFM San Francisco Hearing, p. 725.

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Chapter 3.

THE ECONOMIC ORGANIZATION OF THE FRESH FRUIT AND VEGETABLE INDUSTRY

The marketing channels for fresh produce, comprised of a number of market levels at each of which a variety of kinds of firms may be found, are very complex. A simple description of these is not sufficient for understanding the industry and its economic characteristics because the variety of firm and enterprise combinations vary widely by areas of the country and by crops. Nevertheless certain features of the markets can be generalized, and this is the objective of this chapter.[74]

The purposes of this chapter are threefold: (1) to describe features of the fresh fruit and vegetable industry relevant to the study of farm price stability and market interaction; (2) to indicate the importance of risk-accommodating structures in the industry; and (3) to appraise the performance of industry institutions in terms of their contribution to market stability and coordination.

The collection of economic characteristics examined in this chapter is referred to as the economic organization of the industry, as contrasted to market structure, because the former includes several

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[74]Probably the most complete description of industry trends and characteristics is contained in Technical Report No. 4 of the National Commission on Food Marketing: Organization and Competition in the Fruit and Vegetable Industry, (Washington, D.C.: U.S. Government Printing Office), June 1966, Part II. Prior to that report, owing perhaps to the diversity of interest expressed under the decentralized research effort of the separate Land Grant Colleges as well as the difficulty of generalizing upon such a large number of crops and geographic areas, there is a dearth of descriptive analysis of the fresh produce industry. A report parallelling the NCFM study was published by the Department of Agriculture in July 1966: Agricultural Markets in Change, U.S. Department of Agriculture, Economic Research Service, Agr. Econ. Rpt. No. 95.

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market characteristics generally not considered to be elements of market structure as that term is commonly used. The purpose here is to examine only those market characteristics related to the interaction of the marketing and production sectors of the industry and, particularly, those features relevant to the price stability at the producer level. Both because some of the conventional structural variables such as market concentration do not seem applicable to the purpose and because some characteristics of this industry, such as the form and nature of exchange relations which are not normally thought of as structural variables do seem applicable, the term "economic organization" was chosen in place of market structure.

Market characteristics of greatest interest to this purpose include the range of alternatives available to buyers and sellers at the various trading junctures of the industry, the allocation and combinations of marketing functions and enterprises among firms, market institutions relating to risk and uncertainty, and the several means by which vertical coordination and control are promoted and enforced in the industry.[75] These will be examined at the four principal nodes in the fresh fruit and vegetable marketing channel: the producer-first handler relation, the selling market of first handlers, the

[75] It will be noted each of these organizational properties of the industry includes, but is not limited to, the more conventional market structure and conduct properties. For example, sizes of buyers and sellers and market concentration are aspects of the quantity and quality of market alternatives but do not completely define these alternatives. Also, product differentiation and barriers to entry may consist of the possibilities of combining or disaggregating market enterprises or be products of attempts at vertical coordination of the market levels. Whether these dimensions of market organization are suitable for other industries or not, they appear to be more fertile areas of study for the fresh fruit and vegetable industry than the dimensions outlined in the structuralist approach.

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wholesale markets, and the retail market. These market sectors are shown in figure 1 which provides a general, simplified description of the fresh produce marketing channels.

The Producer-First Handler Relation. As shown in figure 1 the shipping point market is the point at which the fresh produce is introduced into the marketing sector. It is composed of a group of firms in direct contact with producers and because of this proximity to production is responsible for the fundamental marketing decisions relating to product preparation for market and the physical distribution of the product. As the first market for fresh produce the firms in the shipping point market also exert considerable influence over acreage, output and producer prices. For these reasons the economic organization of these markets will receive somewhat more attention than the other market levels to be studied.

Only perhaps 1 percent of total producer sales of fresh produce is sold directly to consumers. The bulk of producer sales are made to these firms in shipping point markets and to local wholesalers. The importance of these shipping point markets and firms is increasing with the geographic concentration of fresh fruit and vegetable production. Virtually all sales from the producing areas of Florida and California to the large Northern markets are made through the shipping point markets. These two states account for approximately 68 percent of the value of fruit production and 59 percent of fresh vegetable production.[76]

In other food marketing industries there is no entirely comparable marketing sector to that of the fresh produce shipping point market.

[76]Bureau of the Census. U.S. Census of Agriculture: 1959; Agricultural Statistics, U.S. Department of Agriculture, 1964.

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The Producer-Shipping Point Relation. As shown in figure I the shipping point market is the point at which the fresh produce is introduced into the marketing sector. It is composed of a group of firms in direct contact with producers and because of this proximity to production is responsible for the fundamental marketing decisions relating to product preparation for market and the physical distribution of the product. As the first market for fresh produce the firms in shipping point market also exert considerable influence over acreage, output and producer prices. For these reasons the economic organization of these markets will receive somewhat more attention than the other market levels to be studied.

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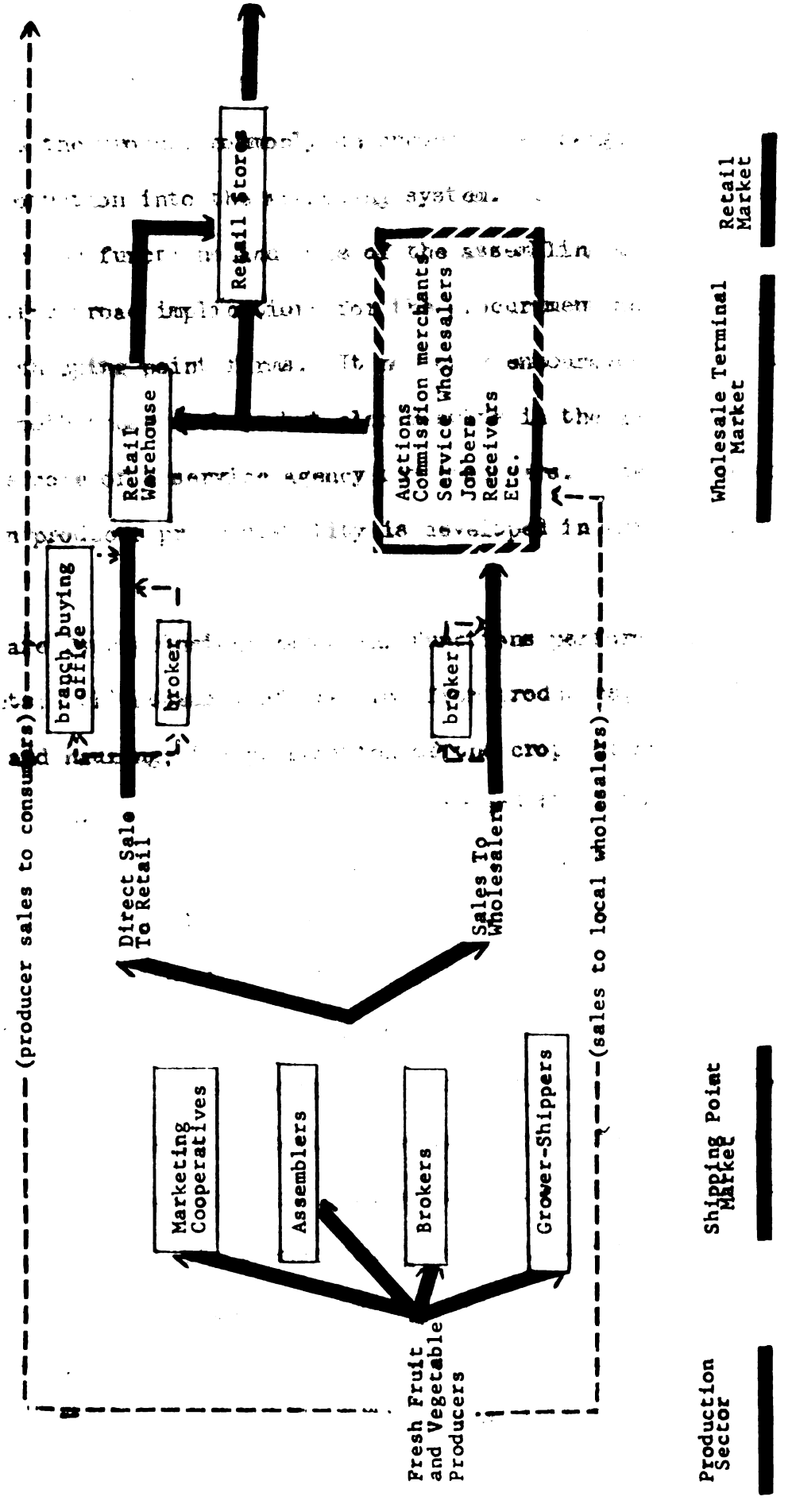


Figure 1. Major Marketing Channels For Fresh Fruits and Vegetables.

The principal role of this market in the industry is to preserve or enhance the products' harvested state whereas in other food distribution channels the product commonly undergoes some change in form upon initial introduction into the marketing system. This is a fundamental difference in the functions and role of the assembling market for this industry having broad implications for the procurement and selling behavior of shipping point firms. It not only encourages quality competition in both these markets but also results in the assemblers assuming the role of a service agency for producers. The effect of this role on producer price stability is developed in this and later chapters.

There are four principal marketing functions performed in shipping point markets: (1) assembly of the crop from producers, including harvesting and hauling; (2) preparation of the crop for market consisting of cleaning, washing, packing, coloring and the like; (3) physical distribution of the product involving time and spatial decisions; and (4) the transfer of product title from producing to consuming markets and the allied function of price making. As shown in figure 1 the producer of fresh fruits and vegetables typically has four marketing alternatives or kinds of shipping point firms to whom he may sell. While sometimes all these marketing functions are combined into a single firm, more often they are divided among two and sometimes more shipping point firms. The grower-owned and managed marketing cooperative is at one time or another during the season involved with all these marketing functions. Or the independent producer may sell to an assembler who performs the first and second functions but delegates

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the third and fourth to a sales agency or broker.[77] And while the brokerage concern is generally associated with only the fourth marketing function, title transfer, these firms often combine this with the other functions as well.

Table 1 indicates one method of classifying the kinds of shipping point firms based on ownership, integration, and marketing functions performed. The categories are not mutually exclusive, as noted, but they highlight such characteristics as integration and the separation of marketing functions among firms. For this reason they are more useful for the purpose of this study than the more conventional classifications. The kinds of firms are in some cases self-explanatory. Marketing cooperatives represent a forward integration on the part of producers into shipping point markets; grower-shippers are the product of proprietary integration of the production and shipping point marketing functions.

Most types of shipping point firms declined in number and increased slightly in size over the post-WWII period. The number of fresh fruit and vegetable assemblers increased by 12 percent over the 1948-58 period and then declined somewhat during the 1958-63 period. The average size of these assemblers increased from $535,000 in 1948 to

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[77] In the literature shipping point firms are alternatively referred to as assemblers, first handlers and shippers. These names refer to the market level on which the firms operate, namely the shipping point market, and do not serve to distinguish firms by marketing functions performed. A distinctive feature of this study is that brokers located and operating in shipping point markets are included in the kinds of first handlers found in shipping point markets. This is not the normal practice because most brokers do not deal directly with producers but only with shippers. However, viewed in terms of the four marketing functions above it is clear the broker merely substitutes for one of the shippers' roles.

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Table 1. Trends in Numbers and Sizes of Fresh Fruit and Vegetable Shipping Point Firms, 1948-65.

Kind of Firm	Item	1948	1954-55	1958-60	1963-65
Assemblers[1]	number	2032	1993	2277	2106
	av. sales ($000)	535	646	638	715
Shippers[2]	number	NA	3538	2320	1912
	av. carlot sales	NA	583	762	921
Grower-shippers[3]	number	NA	7349	5544	4921
	av. carlot sales	NA	350	399	424
Brokers[4]	number	NA	2347	2355	2277
	av. carlot sales	NA	920	935	989
Cooperatives[5]	number	NA	745	729	634
	av. sales ($000)	NA	940	1238	1793
Branch Buying Offices[6]	number	NA	166	NA	182

[1]Bureau of the Census. U.S. Census of Wholesaling: 1948, 1954, 1958, 1963, passim. The Bureau of the Census defines assemblers as wholesale establishments primarily engaged in purchasing, packing and marketing fresh produce received directly from producers. These assemblers include the shippers and cooperatives defined elsewhere in the table.

[2]NCFM Technical Rpt. No. 4, p. 57. Shippers were defined as plants purchasing direct from producers, performing the necessary marketing functions such as packing and grading attendent to shipping, and making long-distance shipments of fresh produce. This definition differs from that of an assembler only in that the Bureau of the Census does not include firms with no paid employees. It is likely that one-man shipping operations, where all marketing functions are performed on the farm, account for the divergence between the number of shippers and assemblers in 1954-55.

[3]NCFM Technical Rpt. No. 4, p. 57. Grower-shippers were defined as shipping point plants engaged in both the production and marketing of fresh produce, without distinction given to the relative importance of the two functions.

[4]NCFM Technical Rpt. No. 4, p. 57. Shipping point brokers include buying brokers, those selling brokers engaged in the long-distance shipping of fresh produce, combination buying-selling brokers, and grower-brokers. This excludes selling brokers located in the central terminal markets and not engaging in long-distance shipping. In

Table 1. Trends in Numbers and Size of Fresh Fruit and Vegetable Shipping Point Firms, 1948-65.

Kind of firm	Item	1948	1954-55	1959-60	1964-65
Assemblers[1]	number	2082	1893	2277	2106
	av. sales ($000)	555	646	636	715
Shippers[2]	number	NA	3758	2280	1912
	av. carlot sales	NA	563	762	921
Grower-shippers[3]	number	NA	7249	5544	4921
	av. carlot sales	NA	350	399	434
Brokers[4]	number	NA	2347	2855	2277
	av. carlot sales	NA	920	935	989
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contrast to the census data it includes one-man brokerage concerns which are likely the dominant form in the industry.

[5] Statistics of Farmer Cooperatives, U.S. Department of Agriculture, Farmer Cooperative Service, annual. The data include cooperatives handling produce for both the fresh and processed markets because many are involved in both markets. The percent of all cooperatives handling crops primarily for only the fresh market has not changed appreciably in recent years as shown by data in NCFM Technical Rpt. No. 4, p. 113.

[6] Unpublished data of the NCFM from a staff survey of the Fruit and Produce Credit Book (Wheaton, Ill.: Produce Reporter Co.), Spring editions of 1955 and 1965. Branch buying offices are purchasing offices of retailers and wholesalers located in shipping point markets. The survey included the major branch buying offices of the largest ten retail chainstore organizations and the major wholesale organizations.

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[illegible] Statistics of Labor Organizations, U.S. Department of Agriculture, Farmer Cooperative Service, annual. The term fruit in cooperative handling produce for both the fresh and processed markets because many are involved in both markets. The period of all cooperatives are approximately in recent years as also by dates in their individual fpc. No. 4, p. 113.

[illegible] Unpublished data of the kind from a staff survey of the Fruit and Produce Credit Bank (Chicago, Ill.: Produce Reporter Co.), figuring estimates of 1955 and 1960. Branch buying offices are purchasing offices of retailers and wholesalers located in shipping producing areas. The survey included the major branch buying offices of the largest retail chain stores organizations and the major wholesale organizations.

$715,000 in 1963. There were some 810 marketing cooperatives handling fruits and vegetables in 1952, of which 73 percent were reported to have been primarily handling the fresh crop; in 1964 there were 634 cooperatives and about 66 percent specializing in the fresh product. Over the 1952-64 period the average sales of cooperatives handling primarily fresh produce increased from $622,000 per year to $1,254,000.[78]

In 1965 grower-shippers reportedly accounted for 54 percent of the firms in shipping point markets and 44 percent of total sales there; the relative importance of these firms had not changed appreciably since 1955, the first year for which data is available.[79] But these integrated firms have always been the most important in shipping point markets in the contemporary period. Assemblers accounted for 21 percent of firms and 26 percent of sales in 1965, and brokers accounted for the remaining 25 percent of firms and 30 percent of sales.[80]

The shipping point firms listed in table 1 experienced different growth rates over the 1955-65 period as measured by trend in average sales. The average size of cooperatives increased 91 percent over this period, followed by shippers with a growth rate of 58 percent and grower-shippers with a rate of 21 percent. The average size of shipping point brokers increased only 8 percent over this period, and these firms were not characterized by any significant decline in numbers.

Measured by numbers, then, the grower-shipper enterprise is the dominant shipping point firm; in terms of sales the marketing cooperative is the dominant type of firm. Because grower-shippers do not

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[78]NCFM Technical Rpt. No. 4, p. 119.

[79]NCFM Technical Report No. 4, p. 57.

[80]Ibid.

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[79]NCFM Technical Rpt. No. 4, p. 119.

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[80]Ibid.

$715,000 in 1963. There were 320 marketing cooperatives handling fruits and vegetables in 1959, of which 93 percent were reported to have been primarily handling only a fresh crop; in 1954 there were 454 cooperatives and about 60 percent reportedly in the fresh product. Over the 1954-64 period the average value of cooperatives handling primarily fresh produce increased from $602,000 per year to $1,254,000.[78]

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Measured by numbers, then, the grower-shipper enterprise is the

normally produce sufficient supplies from owned acreage to satisfy the volume requirements of their packing and shipping operations and must secure the balance of supplies from independent producers, these firms are the most prevalent distribution alternative for producers.[81] There are perhaps one-half as many non-integrated shippers as grower-shippers in the country, although these tend to be considerably larger than grower-shippers on the average. These shipping point firms, in contrast to grower-shippers, must rely entirely on independent producers for their supplies. The size of these firms and their dependence on large volumes of supplies tends to limit them to the major shipping point markets, increasing the importance of the grower-shipper in the minor shipping point markets. The ratio of integrated to non-integrated shippers is reported to be lowest in the South Atlantic and Pacific regions, the areas of greatest fresh fruit and vegetable production concentration.[82] Similar to the non-integrated shippers, marketing cooperatives are concentrated in the major producing areas where large numbers of growers and volumes of supplies are available for operation

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[81]The extent to which grower-shippers must purchase supplies from independent producers has not received much attention. One study reported that only 52 percent of grower-shippers of California fresh deciduous fruits produced 100 percent of the products they marketed; some 25 percent of the grower-shippers purchased 75 percent or more of supplies from other growers. The extent of this self-sufficiency varied from 51 percent for those firms handling table grapes to 6 percent for those handling fresh cherries: J.A. Jamison, The California Fresh Deciduous Fruit Industry: Structure, Organization, and Practices, California Agricultural Experiment Station, Giannini Foundation Research Report No. 275, April 1964, pp. 30, 48.

[82]NCFM Technical Rpt. No. 4, p. 51. The geographic concentration of shipping point firms follows that of fresh fruit and vegetable production. In 1965 Florida and California accounted for 26 percent of all shippers and grower-shippers and 42 percent of all shipping point brokers: Ibid. p. 53.

numbers of growers and volumes of supplies are available for operation cooperatives are concentrated in the major producing areas where large volume requirements of their packing and shipping operations and must secure the balance of supplies from independent producers, these firms are the most prevalent distribution alternative for producers.[81] There are perhaps one-half as many non-integrated shippers as grower-shippers in the country, although these tend to be considerably larger than grower-shippers on the average. These shipping point firms, in contrast to grower-shippers, must rely entirely on independent producers for their supplies. The size of these firms and their dependence on large volumes of supplies tends to limit them to the major shipping point markets, increasing the importance of the grower-shipper in the minor shipping point markets. The ratio of integrated to non-integrated shippers is reported to be lowest in the south Atlantic and Pacific regions, the areas of greatest fresh fruit and vegetable production concentration.[82] Similar to the non-integrated shippers, marketing

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[82]Ibid. Technical Bpt. No. 4, p. 31. The geographic concentration of shipping point firms follows that of fresh fruit and vegetable production. In 1965 Florida and California accounted for 75 percent of all shippers and grower-shippers and 42 percent of all shipping point movers: Ibid. p. 23.

of the plant at sufficient scale to achieve packing and selling economies. Approximately two-thirds of the marketing cooperatives primarily handling fresh products were located in the South Atlantic and Pacific regions in 1964.[83] And, again, this increases the relative importance of the grower-shipper in markets outside these regions. Cooperatives represent at a maximum 5 percent of all shipping point firms nationally but because of their size almost 18 percent of total shipping point sales.[84]

The geographic concentration of shipping point brokers matches that of the marketing cooperatives. In 1965 the South Atlantic and Pacific regions contained 61 percent of all shipping point brokers.[85] Specializing in the matching of buyers and sellers and operating on a very small margin, these firms require large volumes for profitable operation and survival. This not only limits their services to the major producing areas, influencing shipping point enterprise combination in both those areas and in the less important areas, but also affects the geographic distribution of purchases by retail and wholesale

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[83] Ibid. p. 114.

[84] Ibid. p. 42.

[85] Ibid. p. 46

affects the geographic distribution of purchases by retail and wholesale major producing areas, influencing shipping point enterprise co lines- tion in both these areas and in the less important areas, but also operation and survival. This not only limits their access to the very small margin, these firms require large volumes for profitable Specializing in the marketing of lumber and soldiers and operating on a Pacific regions contained 61 percent of all shipping point problems.[83]

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organizations whose procurement policy relies on these firms.[86] Many brokers do not represent a true distribution alternative for producers of fresh fruits and vegetables since they merely serve as intermediaries between shippers and buyers. But to the extent the grower is integrated to the shipping point level, either cooperatively or through the grower-shipper firm, and to the extent of broker integration into production in the major producing areas, the numbers and sizes of these brokers as well as their role in the total distribution channel becomes of concern to the producer. In addition their effect on shipping point market enterprise combination is of interest to the producers.

From the above description of kinds of firms in shipping point markets two conclusions can be drawn. First the partially integrated grower-shipper is an important factor in these markets and the dominant distribution alternative for producers, somewhat more important in the minor producing areas than in the major areas. Although the geographic concentration of fresh fruit and vegetable production makes possible the cooperative and proprietary shipper with no formal integration into production, even in the major shipping point markets the grower-shipper is dominant in number of firms.

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[86] Thus it is that the organization of a shipping point market, insofar as it will or will not support these shipping point brokers, may impose marketing economies of scale on the major shipping point markets and penalize the minor producing areas. Even where climate permitted there is small chance of new shipping point markets of appreciable size opening up. The marketing apparatus in the form of these brokers coupled with the branch buying offices of large buyers at shipping point, both of which require large volume operation, favor purchasing from the established, large shipping point markets. With appropriate cost savings, of course, areas of production may shift in the future. But this is not the problem of the man in Mississippi who finds lettuce can be grown there in quantity competitive with the California crop but can find no large buyers willing to buy from that area.

organizations whose procurement policy relies on these firms.[68] Many brokers do not represent a true distribution alternative for producers of fresh fruits and vegetables since they merely serve as intermediaries between shippers and buyers. But to the extent the grower is integrated to the shipping point level, either cooperatively or through the grower-shipper firm, and to the extent of broker integration into production in the major producing areas, the numbers and sizes of these brokers as well as their role in the total distribution channel becomes of concern to the producer. In addition their effect on shipping point market entry/price combination is of interest to the producers.

From the above description of kinds of firms in shipping point markets two conclusions can be drawn. First the partially integrated grower-shipper is an important factor in these markets and the dominant distribution alternative for producers, somewhat more important in the minor producing areas than in the major areas. Although the geographic concentration of fresh fruit and vegetable production makes possible the cooperative and proprietary shipper with no formal integration into production, even in the major shipping point markets the grower-shipper is dominant in number of firms.

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Secondly there are a number of enterprise combinations in shipping point markets and most of these combinations appear providing a wide assortment of functional forms. Crop characteristics, technology and marketing requirements account in part for this diversity of enterprise combination. Carrots and lettuce may be packed in the field during the harvest process and are more applicable to the grower-shipper operation than these crops requiring shed-packing. Fresh citrus crops are almost always delivered to an independent packer or shipper by the producer for extensive product preparation in the packing house before marketing. But there are variations in enterprise combination in shipping point markets which cannot be attributed to crop characteristics and marketing requirements. The economic bases of these variations in enterprise combination are of particular importance to this study.

As a rule the entire range of shipping point enterprise combinations exists and apparently competes successfully simultaneously in the several shipping point markets. There are certain markets more heavily populated by cooperatives than others; there are markets where brokers are far more dominant than in others. But within the same market more than one form of enterprise combination is typical; and the popularity of forms of enterprise combination for the same crop differ throughout the country. This is alternatively accounted for by tradition and economies of enterprise aggregation or dissaggregation.

Evidence is lacking for testing empirically the last hypotheses. However, because of the divisibility of the shipping point marketing functions and their frequent isolation into single enterprise firms the implicit prices and costs resulting from various combinations must

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Evidence is lacking for testing empirically the last hypotheses. However, because of the divisibility of the shipping point marketing functions and their frequent isolation into single enterprise firms the implicit prices and costs resulting from various combinations must

be well known by producers and firms in the shipping point markets. And if these prices and costs of the production opportunities are known and no single enterprise combination is subplanting alternatives, then it may be taken there are relatively constant returns to the integration of the shipping point marketing functions.[87] A similar argument holds for the integration of the shipping point market with production; if anything the decline in numbers of grower-shippers over the 1955-65 period indicates diseconomies to the form of integration, at least at present if not when the integrated units were formed.

An alternative explanation for the varying enterprise combination in shipping point markets has been offered by Blaich.[88] While not ignoring the implications of the firms' cost structure for enterprise integration, he suggests the need for market coordination in terms of the substitution of management for the pricing mechanism is a frequent source of the integration of marketing functions. This explanation is of interest here because it permits greater variety in enterprise combination than does a cost explanation of enterprise combination. The perceived needs for improved market coordination and the manner of substituting other coordinating institutions for the pricing mechanism

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[87]This would be true for the brokerage function, i.e. matching of buyers and sellers, as well as other shipping point marketing functions since many shippers sell simultaneously through a broker and their own sales force. However, this is not to indicate there are no economies of scale in some of these marketing functions. Substantial economies to scale are evident particularly in the selling operation of the firms. A small brokerage office consisting of one man and a telephone exhibits a sharply declining average cost curve.

[88]Blaich, O.P., Vertical Integration in Theory, University of Minnesota, Department of Agricultural Economics, Report No. 520, Nov. 1961. For an application of this thesis see his: "Integration in Theory with an Application to Hogs", Journal of Farm Economics, 42:1280-93, Dec. 1960.

be well known by producers and firms in the shipping point markets. And if these pros and cons of the production opportunities are known and no single enterprise combination is supplanting alternatives, then it may be taken there are relatively constant returns to the integration of the shipping point marketing functions.[64] A similar argument holds for the integration of the shipping point market with production: if anything the decline in numbers of grower-shippers over the 1955-65 period indicates diseconomies to the form of integration, at least at present if not when the integrated units were formed.

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[65] Plaia, G.F., "Vertical Integration in Grain", University of Minnesota, Department of Agricultural Economics, Report No. 230, Nov. 1961. "Or an application of this thesis see Ida. "Integration in Theory with an Application to Hops", Journal of Farm Economics, 42:1280-93, Dec. 1960.

understandably vary among firms in the same market and handling the same crops.

The institutional structure of fresh produce shipping point markets relevant to this inquiry concerns the forms of exchange between buyers and sellers, the extent and kinds of integration and other arrangements cementing the relations between buyers and sellers, and the mechanisms available for coordinating marketing functions and product movement to market. This institutional structure reflects several unique features of the industry: shipping point firms are characteristically larger than the producers from whom they must secure supplies, many of these firms are partially integrated into production, procurement competition for supplies emphasizes product quality, and product perishability requires that the product be prepared for market and shipped immediately after harvest with the exception of a few crops which can be stored. This urgency of marketing derives from the largely uncontrolled growth and maturity of the product after planting and quality deterioration after harvest.

Shipping Point Exchange Relations. In addition to shipper procurement from owned acreage there are two principal exchange arrangements between shipping point firms and producers: complete and incomplete exchange.[89] The difference between these two forms of exchange for purposes here lies in the time at which price is determined and the sensitivity of the producers' price to structural changes and disturbances originating further along in the marketing channel. A complete

[89] NCFM Technical Report No. 4, p. 89.

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[89] USDA Technical Report No. 4, p. 89.

exchange arrangement is analogous to a non-recourse cash sale and consists of a total transfer of risks, rights, and obligations with product transfer from seller to buyer. Under these circumstances, typically through the process of negotiation preceding harvest of the crop or at harvest time, the shipping point firm makes a cash purchase of the crop and markets it entirely for its own account. The transaction may or may not call for the shipper or grower-shipper to perform the harvesting function, but all other shipping point marketing functions and risks and the profits deriving thereof are the responsibility of the shipper.

While the prices offered producers by shippers in the form of complete exchange arrangements reflect the expected selling prices of the shipping point marketing firms, the producer is isolated from any unexpected price changes occurring after the product is transferred to the shipper.[90] Should the shipping point market selling price diverge from that expected when the transaction is made, either because of a change in supplies of the crop due to weather, disease or the like or because demand has changed or because of a change in product

[90]The difference between actual and expected selling price may, of course, be windfall profit or losses; accordingly the producer may or may not prefer this isolation from unexpected changes in prices. It may also be noted that shippers could include a risk premium in their offer prices to producers, thereby shifting the costs of these risks at least in part to producers. But comparison of prices paid producers under complete and incomplete exchange arrangements does not indicate the former includes a risk discount. As will be shown the substitution of incomplete for complete exchange arrangements is itself a means for the shipper to protect himself from price fluctuations originating further along in the marketing channels, not a means for influencing directly the level of farm prices.

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[20] The difference between actual and expected selling price may, of course, be small or nil on input; accordingly the producer may or may not prefer this information from unexpected changes in prices. It may also be noted that shippers could include a risk premium in their offer prices to producers, thereby shifting the costs of these risks at least in part to producers. The conclusion of prices paid producers under complete and incomplete exchange arrangements does not indicate the former implies a risk discount. As will be shown the substitution of these plans for complete exchange arrangements is itself a reason for the shipper to protect himself from price fluctuations during marketing channels short in the marketing channels, not a means for increasing directly the level of farm prices.

exchange alternative is analogous to a non-recourse cash sale and consists of a total transfer of risks, rights, and obligations with product transfer from seller to buyer. Under these circumstances, typically through the process of negotiation preceding harvest of the crop or at harvest time, the shipping point firm makes a cash purchase of the crop and markets it entirely for its own account. The transaction may or may not call for the shipper or grower-shipper to perform the harvesting function, but all other shipping point marketing functions and risks and the profits derivitive thereof are the responsibility of the shipper.

While the prices offered producers by shippers in the form of complete exchange arrangements reflect the expected selling prices of the subsequent packing marketing firms, the producer is isolated from any unexpected price changes occurring after the product is transferred to the shipper.[20] Should the shipping point market selling price diverge from that expected when the transaction is made, either because of a change in supplies of the crop due to weather, disease or the

quality, the derived farm price will not change accordingly.[91] The significance of these characteristics of the complete exchange arrangement lies in their attributing the costs and profits of market fluctuations and incorrect price expectations to the shipping point market sector, the market responsible for the basic decisions relating to distribution of the crop in time, form, and space. This is the market in the most favorable position, by right of influence on output through integrated and contractural arrangements and control of the national pricing surface, for correcting market price fluctuations originating either forward in the marketing channels or in farm markets.

A sizable portion of the industry operates on the complete exchange arrangement. A cash or on-tree price is common for most fruit crops, especially citrus fruits, and is often an alternative for the vegetable producer as well. But for both fruits and vegetables in most areas the incomplete exchange arrangement is the dominant form of exchange obtaining between producers and firms in the shipping point markets. And for many producers it is the only distribution alternative available short of integration into the shipping point marketing functions.

The shipping point incomplete exchange arrangement between producers and shippers is an industry institution designed to cope with risks of marketing fresh produce as a result of either product perishability or unexpected shortages and surpluses. It is characterized by a partial exchange of risks, rights and obligations at the time of product transfer to the shipper. It permits the marketing of crops

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[91] The possibility of these short-run price changes resulting from changes in demand is predicated upon retail pricing and merchandising policy which is partially independent of wholesale prices and supplies: see Chapter 5.

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A simple portion of the industry operates on the complete commercial arrangement. A cash or on-tree price is common for most fruit crops, especially citrus fruits, and is often an alternative for the vegetable producer as well. Bid for both fruits and vegetables in most areas the incomplete exchange arrangement is the dominant form of exchange obtaining between producers and firms in the shipping point markets. And for many producers it is the only distribution alternative available short of integration into the shipping point marketing functions.

The shipping point incomplete exchange arrangement between producers and shippers is an inherently friction afflicted to come with risks of marketing farm products as a result of either practical penalties or premiums for quality, the farmer will not change accordingly.[2] The significance of these direct effects of the complex exchange arrangements lies in their acting upon the costs and profits of marketing functions and indirect price repercussions on the shipping point market sector, the market responsible for the basic decisions relating to distribution of the crop in time, form, and space. This is the market in the most favorable position, by right of influence on output through integrated and contractual arrangements and control of the national pricing surface, for correcting market price fluctuations originating either forward in the marketing channels or in farm returns.

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when the cost of price negotiation in terms of product losses is extremely high. In mechanics it involves a shipper agreement to perform the customary shipping point marketing functions for the product, selling the crop for the best price that can be obtained, extracting a fee for these services from the selling price of the crop, and remitting the remainder of the selling price to the producer. All this is done, in contrast to the complete exchange arrangement, while the producer retains economic and legal title to the crop.

Whether its justification lies in its flexibility for marketing a perishable crop the supply of which is subject to wide fluctuations or its contribution to orderly marketing by providing shippers full discretion without risk of product ownership in making time, form and spatial marketing decisions, the incomplete exchange arrangement has serious implications for the price stability of farm markets. With these arrangements the shipper is able to add marketing services to the product without also assuming ownership and marketing risks. His is an agency function to an extent; but his strategic position in the fresh produce distribution channel coupled with the incomplete exchange arrangement place the shipper in the position of making the marketing decisions for the producer without assuming the risks of produce ownership.[92]

There is no good estimate of the extent to which producers of fresh fruits and vegetables market their crops under incomplete exchange arrangements. Nor is there a measurement of the availability

[92]The implications of this separation of the marketing functions from the marketing risks and the consequent economic behavior of the shipping point market firm are further explored in Chapter 5.

when the cost of trade promotion is more of problem because is extremely high. In evaluating it involves a shipper more with to perform the customary shipping point marketing functions for the product, selling the crop for the best price that can be obtained, subtracting a fee for these services from the selling price of the crop, and remitting the remainder of the selling price to the producer. All this is done, in contrast to the complex auction system, solely the producer retains ownership until legal title to the crop.

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of the complete exchange alternative. There are variations in the terms of incomplete exchange arrangements adequately described elsewhere.[93] All shipping point firms, assemblers, shippers, brokers dealing direct with growers, and grower-shippers, employ incomplete exchange in some portion of their supply procurement. And, although the pooling arrangements by which marketing cooperatives secure most of their supplies from grower-members differ somewhat from the methods used by other kinds of shippers, cooperative procurement can be said to be dominated by the incomplete exchange arrangement.[94]

The relative importance of complete and incomplete exchange arrangements is known to vary by crops, regions, and kinds of shipping point firms. But no single hypothesis, related to the state of the market, the numbers of buyers and sellers, or the kinds of shipping point firms involved, withstands the test of national

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[93] NCFM Technical Rpt. No. 4, p. 89.

[94] The difference, of course, is that the grower-members share in both the marketing decisions and profits of the cooperative. Indeed, these two features of cooperatives can be said to be stimulants for cooperative organization and growth. But whether the cooperative treats its members as patrons or investors will influence the extent to which the procurement methods of cooperatives resemble in intent and performance those of non-cooperative shippers. On this dichotomy of cooperative policy, see: H.F. Breimyer, Individual Freedom and the Economic Organization of Agriculture, (Urbana, Ill.: University of Illinois Press), 1965, pp. 259-71.

of the complete exchange alternative. There are variations in the terms of incomplete exchange arrangements already described elsewhere.[93] All shipping pools (firms, syndicates, shipyards, marine dealing divers with promoters, and investment-buying clubs) exchange in some portion of their supply investment. And, although the pooling arrangements by which members cooperatives assume part of their supplies from private sources differ somewhat from the methods used by other kinds of shipyard, cooperative procurement can be said to be dominated by the incomplete exchange arrangement.[94]

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[93] MIM Yearbook of Agr. Co-op. p. 93.

[94] The difference, of course, in that the cooperatives enter in both the marketing decisions and profits of the cooperative. Indeed, these two features of cooperatives can be said to be ultimate for cooperative organization and growth. The member cooperatives create the incentive as patrons or investors with influence the extent to which the procurement needs of cooperatives in input and performance fields of non-cooperative spheres. On this dichotomy of cooperative policy, see: H.B. Arthur, Vertical Integration and the Problem of Marketing Cooperatives, (Chicago, III.: University of Illinois Press), 1940, pp. 24-41.

generalization.[95] There are apparently a number of market combinations of these two forms of exchange existing simultaneously across the country. It is true some of these combinations are enforced by shipper contracts and financing with producers. But this makes the disparity among markets even more exceptional. At this point having argued the relative importance of complete and incomplete exchange arrangements in a shipping point market does not have a significant effect on the level of producer prices paid by shippers and that observable differences between shipping point markets do not appear related to this either, it will be hypothesized these differences constitute varying manners of gaining market coordination toward the goal of more stable price relations.

Shipping Point Integration. Ownership and contractual integration of the production and marketing functions constitute a second set of institutional arrangements in shipping point markets relating to firm

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[95] Despite considerable effort in view of the importance attached to complete and incomplete exchange arrangements by the staff of the National Commission on Food Marketing, no estimates of the relative importance or trends of these were made. From personal experience it is clear that industry representatives themselves are unaware of the national differences in the use of these two alternatives. I estimate that, excluding cooperatives, no more than two-fifths of shipping point sales involve complete exchange arrangements. Including cooperatives and designating pooling as a form of incomplete exchange, approximately two-thirds of sales would involve some form of incomplete exchange. But individual market variations are considerable. Further, incomplete exchange is somewhat more common for fresh vegetables than fruits, and there is a moderate, national trend toward the substitution of incomplete exchange for complete exchange in shipping point markets.

generalization.[95] There are apparently a number of market combinations of these two forms of exchange existing simultaneously across the country. It is true some of these combinations are enforced by slipper contracts and financing with producers. But this makes the disparity among markets even more exceptional. At this point having argued the relative importance of complete and incomplete exchange arrangements in a shipping point market does not have a significant effect on the level of producer prices paid by shippers and that observable differences between shipping point markets do not appear related to this either, it will be hypothesized these differences constitute varying manners of gaining market coordination toward the goal of more stable price relations.

Shipping Point Integration. Ownership and contractual integration of the production and marketing functions constitute a second set of institutional arrangements in shipping point markets relating to firm

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attempts to cope with product perishability, insure market coordination at this level, and adjust to market risks. According to table 1 there are better than twice as many grower-shipper operations as non-integrated firms. Moreover some 450 brokerage operations could be indentified as broker-growers in 1965.[96] Vertical integration of the shipping and production functions is far more common than horizontal integration of the shipping operation into more than one shipping point market. Census data indicate better than 85 percent of fresh fruit and vegetable assemblers were single-unit firms in 1954, 96 percent were one or two-unit firms in 1963.[97] Single-unit shipping point plants are most common for those plants integrated into production, the grower-shippers and broker-shippers, and somewhat less common for brokers than for shippers and assemblers.[98]

Although few shipping point firms operate in more than one market, those that do so illustrate an example of marketing economies to scale. The motive for horizontal integration of shipping point plants appears to be the economies associated with the ability of the firm to shift the sales force among different producing areas as the harvest changes location. Because the numerous production areas do not harvest at the same time, crops cannot be transferred to different packing houses. The only firm resource which can transfer among these producing areas is the salesforce and perhaps goodwill. The evidence for the marketing

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[96] NCFM Technical Rpt. No. 4, p. 48.

[97] U.S. Bureau of the Census. U.S. Census of Business: 1954, "Wholesale Trade-Summary Statistics", Vol. III, p. 2-121, 1957; Census of Business: 1963, "Wholesale Trade: Sales Size, Employment Size, Single Units and Multi-Units", BC 63-WS2, 1965, p. 2-119.

[98] NCFM Technical Rpt. No. 4, p. 82.

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[98]USDA Technical Bpt. No. 4, p. 42.

[97]U.S. Bureau of the Census. U.S. Census of Business: 1954, "Wholesale Trade--Summary Statistics", Vol. III, p. 2-123, 1957; Census of Business: 1963, "Wholesale Trade: Sales Size, Employment Size, Single Units and Multi-Units", BC 63-WS2, 1965, p. 2-119.

[96]USDA Technical Bpt. No. 4, p. 92.

economies of this transfer is given by census data which show that operating expenditures as a percent of sales decline significantly with increased numbers of plants operated by a single shipper.[99]

While nationally grower-shippers of fresh fruits and vegetables accounted for 54 percent of shipping point firms in 1965, there were variations in their relative importance throughout the country.[100] These firms accounted for only 44 percent of shipping point firms in the South Atlantic markets but for 80 percent of the firms in the West North Central shipping point markets.[101] Among the stimulants to this form of integration, ruling out the possibility of excessive profits in production of fresh produce, may be listed the control of supplies and product quality in order to better schedule crop inputs with packinghouse requirements and insurance against input shortages in times of light harvests.[102] For the producer the motive of forward integration into shipping point markets is less clear because of the cooperative and non-cooperative alternative forms of integration, but as will be discussed one motive is to insure a market for his crop.

Many of the same motives sometimes give rise to contracts for marketing and production between shipping point firms and growers.

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[99] op. cit., U.S. Census of Business: 1954.

[100] NCFM Technical Rpt. No. 4, p. 48.

[101] Ibid.

[102] Professor Kohls has suggested the increasing scientific nature of farm production has encouraged the integration of the farm and marketing sectors for food. His argument would appear unique to the broiler industry, but in any case there is no evidence production technology has been a factor in the grower-shipper operation for fresh fruits and vegetables. See his: Major Issues in Food Marketing in the Years Ahead, Ontario Agricultural College Publication No. A.E. 65-66/8, March 1966.

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[99]Op. cit., U.S. Bureau of Agriculture: 1954.

[100]USDA Technical Bpo. No. 4, p. 45.

[101]Ibid.

[102]Professor Wolfe has suggested the increasing seasonality nature of farm production has encouraged the integration of the farm and marketing sectors for food. His argument would appear weighty to the broiler industry, but in any case there is no evidence production technology has been a factor in the grower-shipper operation for fresh fruits and vegetables. See his: Higher Income in Food Marketing in the Long Run, Ontario Agricultural College Publication No. A.E. 54-57, March 1956.

These may include a number of terms such as harvest arrangements, marketing services to be performed by the shipper and their costs, the manner in which the producers' return is to be calculated, and the producer's voice in the marketing decisions concerning the disposition of his crop. Perhaps the most important term specified by these contracts is the assurance of a market for the producer and a source of supply for the shipper. While there are some details of these contracts necessary for the marketing of a perishable crop characterized by an unstable market and sold by market agents without ownership of the product, there does not appear to be any reason why even these terms could not be left to more informal arrangements than these marketing contracts. And, if it is only these details to which the contract is addressed, there would seem little reason to sign them months before harvest or even before planting. Almost all cooperatives require owner-members to sign marketing contracts far in advance of the harvest, and this is further evidence these contracts have as their principal purpose the assurance of adequate supplies for the packing and shipping operations.

The 1960 Survey of Agriculture provided an indication of the extent and content of contracts between fruit and vegetable farms and the marketing sector. No distinction was made between contracts for the fresh and processed markets, but it is likely most differences in terms are due to the fresh market contracts. Processor contracts are quite uniform and comprehensive. According to the survey 29 percent of vegetable farm contracts and 70 percent of the fruit farm contracts

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were with cooperatives.[103] Just the opposite was true for the importance of price as a contract term; 76 percent of vegetable contracts and 20 percent of fruit contracts specified the producer price. But the place of delivery of the crop after harvest was the most important contract specification for both fruits and vegetables; 94 percent of the vegetable contracts and 80 percent of the fruit contracts specified to whom the product was to be delivered.

Table 2 illustrates the contract terms of a sample of farmers and packer-shippers, as well as processors, in South Texas for 1958. In that area only about 25 percent of the packer-shipper contracts were concerned primarily with the guarantee of supply sources for the shipper and market outlets for the producer. This would be an understatement of the true extent of such guarantees to the degree that other contract specifications were quantitatively more important in all contracts but less frequent than the market guarantee. Some of these contracts may have contained provisions for the method of calculating producer returns, but only 9 percent could be identified as principally concerned with guaranteeing a price to the grower. Another 25 percent of the packer-shipper contracts could be identified with the harvesting functions of picking and hauling.

The 40 percent of contracts between producers and packer-shippers not concerned with market, harvesting and price guarantees emphasized in one way or another shipper financing of the production operation. Almost 23 percent of the farmers sampled indicated the packer-shippers

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[103]U.S. Bureau of the Census. U.S. Census of Agriculture: 1959, Vol. V, Special Reports, Part 5, "1960 Sample Survey of Agriculture", 1962, p. 6.

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Table 2. Marketing Terms for South Texas Vegetable Marketing Contracts, Sample Survey of Canners, Farmers, and Packer-Shippers, 1958.

Principal Contract Term[1]	Contractor			
	Canner	Farmer	Packer-Shipper	All Firms
	----- percent of contracts -----			
To market	2.8%	15.4	12.9	10.9
To buy	30.6	-	12.9	15.8
Price guarantee	30.6	-	8.6	12.7
Loans	-	-	2.6	1.8
Rent of land	-	23.1	6.0	6.1
Labor provision	-	15.4	8.6	7.3
Fertilizer provision	-	7.7	6.0	4.8
Equipment provision	-	7.7	6.9	5.5
Water provision	-	7.7	6.0	4.8
Picking	13.9	23.0	12.9	13.9
Pre-grading	5.5	-	3.5	3.7
Hauling	11.1	-	12.1	10.9
Other[2]	5.5	-	1.0	1.8
Total	100.0	100.0	100.0	100.0%

[1]Contracts were classified by principal contract term but most contracts contain more than one contract specification.

[2]Two contracts calling for seed advancement and one growing agreement.

Source: National Commission of Food Marketing, McAllen, Texas Hearing, June 11-12, original transcript, p. 57.

Table 2. Marketing Terms for South Texas Vegetable Farm Sales, Sample Survey of Counties, Nueces, San Patricio, 1950.

Principal Contract Term[1]	Farmer	Farmer-Shipper	All Firms
	Percent of contracts		
To market	2.6[2]	15.4	12.9	10.9
To buy	30.6	-	12.9	17.6
Price guarantee	30.6	-	8.6	12.7
Loans	-	-	2.6	1.3
Rent of land	-	23.1	4.0	6.1
Labor provision	-	15.4	8.6	7.3
Fertilizer provision	-	7.7	6.0	4.3
Equipment provision	-	7.7	6.9	5.3
Water provision	-	7.7	6.0	4.3
Plowing	13.9	23.0	12.9	13.9
Pre-grading	5.3	-	2.5	3.7
Heading	11.1	-	12.1	10.9
Other[2]	5.5	-	1.0	1.3
Total	100.0	100.0	100.0	100.0

[1]Contracts were classified by principal contract term but most contracts contain more than one contract specification.

[2]Two contracts calling for cash advancement and one growing agreement.

Source: "National Commission of Food Marketing. Austin, Texas Hearing, June 11-12, and final transcript, p. 57."

financed their land rents. The extent of production financing by shipping point firms is probably greater in South Texas than in other parts of the country, but is not unknown in any fresh produce shipping point market. Its implications, especially in altering the contractual terms to something resembling ownership integration, are developed further in Chapter 5.

Marketing contracts between producer and shippers of fresh produce vary by regions and by crops. A study in 1959 of contracting for the marketing of fresh vegetables showed the number of plantings under contract to shippers varied from 44 percent in Monterey, California to 33 percent in the area of Columbia, Wisconsin to 5 percent in Cameron-Hildalgo, Texas to no contracting in Broward-Palm Beach, Florida.[104] From the national sample it was estimated 6 percent of fresh vegetable production was produced under contract to marketing firms as contrasted to approximately 66 percent of the processing crop.[105]

Table 3 indicates the extent of contractual and ownership integration of fresh vegetable production and marketing in 1959 for a number of crops. It is apparent that the regional differences in integration are in part due to the different crops grown in the regions. Some of the crops are grown in proximity to one another, such as celery, tomatoes and sweet corn in Florida, yet are contrasting in their degree of overall integration and the relative importance of contractual and ownership integration. In the array of major crops there is

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[104] Mighell, R.L., et. al., Contractual Production of Truck Crops, 12 Selected Areas, United States, U.S. Department of Agriculture, Economic Research Service, ERS-152, Mar. 1964, pp. 5, 6.

[105] Ibid.

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[104] Marshall, H.G., et al., Contracting Production of Fresh Vegetables, Selected Areas, Agricultural Marketing Service, U.S. Department of Agriculture, Economic Research Service, ARS-52, Mar. 1962, pp. 3, 6.

[105] Ibid.

Table 3. Contractual and Ownership Integration of Fresh Vegetable Production and Marketing in the Major Truck Crop Producing Areas of the United States, By Kinds of Crops, 1958-59.

Crop	Form of Production Integration with Marketing:		
	Contractual	Ownership	Total
	percent of total acreage		
MAJOR CROPS			
Celery	11	53	64
Lettuce	23	21	44
Tomatoes	8	19	27
Cantaloupes	8	15	23
Carrots	11	6	17
Dry Onions	3	3	6
MINOR CROPS			
Green Onions	23	46	69
Broccoli	50	17	67
Sweet Corn	1	54	55
Green Lima Beans	40	4	44
Asparagus	15	13	28
Cucumbers	2	26	28
Snap Beans	0	28	28
Cauliflour	4	15	19
Beets	15	2	17
Cabbage	1	10	11
Strawberries	4	4	8
Green Peas	2	2	4
Watermelon	0	1	1

Source: Mighell, R.L., et. al., Contractual Production of Truck Crops, 12 Selected Areas, United States, U.S. Department of Agriculture, Economic Research Service, ERS-152, Mar. 1964. pp. 17-18.

Table 3. Continental and Commodity Interpretation of Fresh Vegetable Production and Marketing in the Major Truck Crop Producing Areas of the United States, By Months of Crops, 1949-52.

Crop	Areas of Principal Interest for Fresh Vegetable Production: Harvesting Marketing	
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the suggestion that integration is directly related to crop perishability. But this is not borne out in the array of minor crops where it may be seen strawberries and watermelons, two extremely perishable crops, have very low degrees of integration. Nor does any generalization concerning the relative importance of contractual and ownership integration among the crops emerge.

The extent of integration of the production and marketing functions by crops and shipping point markets, similar to enterprise combination and forms of exchange employed, does not appear closely related to any product or market factor. The relative marketing alternatives of these three organizational characteristics instead are unique in each shipping point market. It seems highly unlikely these variations derive from differences in costs and returns under the various alternative combinations in view of the consequent set of implicit prices of the combinations available. Yet the variations persist to such an extent they are attributed to tradition. Again, the possibility that these variants of market organization represent alternative methods of market coordination and accommodation to production and marketing risks involved in the fresh fruit and vegetable industry must be advanced. On the one hand different risk preferences and aversions of producers and shippers would produce the observed variations; on the other hand the lack of variation in the performance of these combinations as measured by price and cost levels is consistent with the combinations' purpose of coordination and changing of the incidence or magnitude of risk.

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The Shipping Point Sales Market. As shown in Figure 1 the shipping point marketing firm has two principal distribution alternatives, sales to wholesalers and sales to retailers direct. In 1948 shippers sold 80 percent of their supplies of fresh produce to wholesalers and some 11 percent direct to retailers; by 1963 they were selling only 57 percent of supplies to wholesalers and 28 percent to retailers.[106] This was a fundamental change in the marketing alternatives of shipping point firms and was accompanied by significant changes in the market organization of fresh fruit and vegetable wholesale and retail markets. In particular, this trend to direct retail marketing corresponded with the integration of the retail organizations into wholesale markets and ultimately into shipping point markets through the instrument of the branch buying office and necessitated such adjustments in the wholesale markets as the competitive assumption of more marketing functions, such as prepackaging of produce, and enterprise combination of the traditional receiving and break-bulk marketing functions of the wholesale terminal markets.

The shipper or assembler may employ the services of a broker in selling to either the retail or wholesale market. Serving as the intermediary between shippers and their markets and performing for the most part only the communication function, these brokers nevertheless make available to shippers a wide range of divisable marketing services. Shippers with small sales forces and principal interest in packing

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[106] Bureau of the Census. U.S. Census of Business: 1948 and 1963: secondary source: NCFM Technical Rpt. No. 4, P. 92. The trend from 1948 to 1963 is the only span for which data are available. But the trend toward direct marketing had its origins in the 1920's and early growth in the late 1930's.

The Midwestern Public Opinion Institute. In a survey in August of the midpoint, point marketing firm has two national subdivisions after mailout, sales to wholesalers and sales to retail outlets. In June shippers sold 60 percent of their supplies of ice cream to wholesalers and some 11 percent direct to retailers; by July 1 they were selling only 57 percent of supplies to wholesalers and 27 percent to retailers.[105] This was a fundamental change in the marketing structure of shipping point firms and was accompanied by significant changes in the number or variation of fresh fruit and vegetable wholesale and retail markets. In particular, this trend to direct retail marketing corresponded with the interposition of the retail organization into wholesale lanes and ultimately into shipping point markets through the installment of the branch buying office and necessitated such a three cube in the wholesale markets as the comprehensive assumption of more marketing functions, such as preparedness of produce, and enterprise combination of the traditional receiving and breakbulk marketing functions of the wholesale terminal markets.

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[105]Bureau of the Census. Ltr. Figure of reference: [illegible] and [illegible]: secondary sources: [illegible] ref. no. n. p. [illegible] the data from [illegible] to [illegible] is the only year for which data are available. But the trend toward direct marketing in the origins in the [illegible] and early growth in the late [illegible].

could not exist and compete successfully in the national market without these services, so great are the marketing economies of scale.[107] There are variations in firm employment of broker services, and shipping point sales to wholesalers more often involve these services than sales to retailers. In 1958 it was estimated 24 percent of wholesaler purchases from shipping point involved a shipping point broker or sales agency, and 10 percent of retailer purchases from shippers were negotiated by brokers and sales agencies.[108]

There are few continuing marketing arrangements between shippers and wholesalers and substantially no formal arrangements between shippers and retailers. On occasion a wholesaler may enter into an agreement to market the crop of a shipper. But more commonly trading relations between shippers and their buyers are quite fluid owing on the one hand to the desire of shippers to remain quite flexible in the event customary market outlets discontinue buying, and on the other hand to the desire of buyers to remain flexible in procurement as insurance against poor quality crops from customary supply sources.[109]

There is a small cost generally to changing market relations at

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[107] NCFM Technical Rpt. No. 4, p. 40.

[108] Manchester, A.C., The Structure of Wholesale Produce Markets, U.S. Department of Agriculture, Economic Research Service, Agr. Econ. Rpt. No. 45. pp. 36, 72.

[109] Manchester argues these incentives to maintain alternative supply sources and market outlets on the part of buyers and sellers are the essence of competition at this market level, preventing the exercise of market power and even short-run profit maximization at times: Ibid., p. 113-14. A comparison with the preceding discussion of the rigidity of the producer-shipping point relation will show that the same motives, the desire to insure crop quality and product supplies, operate to cement buyer-seller relations at that market level.

There is a small cost generally to charging marked reductions at
insurance against poor quality crops from unnecessary supply to ports.[99]

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[99]Hoik Technical Bpt. No. 4, p. 40.

[100]Woodcock, A.J., The Structure of Wholesale Feeding Activity, U.S. Department of Agriculture, Economic Research Service, Agr. Econ. Bpt. No. 45, pp. 34, 72.

[101]Manchester exports of rice increased to relatively alternatives only sources and ranged only in on the part of buyers and sellers to cessation of competition at this market for it, preventing the exercise of normal power as even short-run profit maximization at times: Ibid., p. 11-21. A comparison with the preceding discussion should show that the supply-shifting point relation will show the same motives, the desire to buy the cane quality and product supplies, of course to demand buyer-seller relations at market level.

this market level. The existence of local buying offices and brokers in addition to the prevalence of telephone trading and a well-developed formal and informal market news service permits retailers and wholesalers to secure supplies from all parts of the country, almost without regard to their size, and to readily change regional or firm supply sources at small cost and effort. For much the same reasons there are few constraints on the geographical marketing decisions of shippers. While consistent trading relations between buyers and sellers do develop based on mutual satisfaction of buyers and sellers, special services or even friendships, both are aware the relationship is a fragile one subject to change at little cost. The one exception to this, more or less successfully guarded against by shippers but increasing in importance with the concentration of buyers, is the situation where the buyer takes such a large portion of the shipper's supply that considerable costs in the form of additional marketing effort would be imposed on the shipper by the loss of the account. The relative sizes of buyers and sellers prevents an equal, reciprocal threat.

The flexibility in trading relations between shippers and their buyers is in contrast to the increasing rigidity of trading between producers and shippers of fresh produce, manifest in financing arrangements, contracting and direct ownership integration. The period of time between these two exchanges is so short as to rule out change in product perishability as an explanation of the difference in quality of relations. The increase in number of marketing alternatives, hence reduction in the threat of loss of markets, from the local shipping

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producers and shippers of fresh produce, modified in increasing arrange-

point market to the national shipping point selling market may be one explanation for this change.[110] But an equally plausible explanation is the greater crop investment and risk, thus need for risk-accommodating institutions, in the shipping point procurement market than in the selling market.

As in procurement markets, shipping point sales involve both complete and incomplete exchange arrangements. Table 4 indicates kinds of sales terms and their prevalence obtaining between shippers and buyers. Legal descriptions of these and other sales terms are formulated and enforced in the Perishable Agricultural Commodities Act of 1930, as ammended.[111] The basic differences in these various terms concern the point in the marketing channel at which title and risk pass from buyer to seller; often this point is defined by recourse terms such as "inspection upon arrival". Judging from the number of terms defining the various points at which the crop is legally transferred from seller to buyer and the importance of this point for perishable products which decline in quality with time, it is fair to say the complexities of this trading relation are caused primarily by the market risk involved in shipping fresh fruits and vegetables.

As Table 4 shows, the selling terms of shipping point firms divide roughly into those terms where title and risk pass to the buyer in the

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[110] Nicholls suggests that tieing, service competition dominates in local agricultural assembler procurement markets because of the local monopsony afforded buyers by location and product perishability: Imperfect Competition within Agricultural Industries, (Ames, Iowa: Iowa State College Press), 1941, p. 8.

[111] For legal descriptions of these sales terms see: Regulations (Other than Rules of Practice) Under the Perishable Agricultural Commodities Act, 1930, regulations effective January, 1965. available from the U.S. Department of Agriculture, Consumer and Marketing Service.

point marked to the material ship's point selling price, or some explanation for this change."[110] Such an explicit statement is the greater step toward an "all in" price. This would allow meaningful institutions. In the eighth part, price would be taken in the selling market.

As in present market, shipping point sales would continue most common plate and immediate exchange arrangements. Selling practices might of sales terms and their permissive obligations between shippers and buyers. Legal descriptions of these sales terms are formulated and enforced in the Perishable Agricultural Commodities Act of 1930, as amended.[111] The basic difference in these various terms concern the point in the marketing channel at which title and risk pass from buyer to seller; often this point is defined by presence terms such as "inspection upon arrival". Judging from the number of terms defining the various points at which the crop is legally transferred from seller to buyer and the importance of this point for perishable products which do little in quality with time, it is fair to say the complexities of title transfer relation are caused primarily by the market risk involved in shipping fresh fruits and vegetables.

As Table 4 above, the selling terms of shipping point firms divide roughly into those terms where title and risk pass to the buyer in the

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[110] Galbraith emphasizes that thinking, marketing corporation decisions in formal agricultural marketing programs in relation to terms of trade, transparency of costs, by price discrimination and product differentiation: Economic Concentration (Hearings, 85th Cong., 1st Sess. before Subcom. on Antitrust), Part 1, p. 1.

[111] For legal descriptions of these sales terms, see Perishable Agricultural Commodities Act, 1930, as amended (Public Law 85-162, 85th Cong., 1st Sess., approved August 14, 1957), 7 U.S.C. 499a-499s, 71 Stat. 375-381. For discussion of these terms, see Marketing Terms for Fruits and Vegetables, U.S.D.A. Agricultural Marketing Service, Fruit and Vegetable Division, Washington, D.C., 1957.

Table 4. Sales Terms for Retail and Wholesale Purchases of Fresh Fruits and Vegetables from Shipping Point Markets, 1958-59.

Terms of Sale	Kind of Buyer: Wholesalers	Retailers
	(percent of purchases)	
F.o.b. shipping point, total	73	58
suitable shipping condition	71	-
shipping point inspection	1	-
shipping point inspection final	1	-
subject to approval-wired govt. inspection	*	-
F.o.b. acceptance	6	8
F.o.b. acceptance final	2	-
F.o.b. inspection and acceptance on arrival	1	4
F.o.b. sale at delivered price	1	-
Delivered sale	14	30
Delivered sale-acceptance and inspection final	*	-
Price on arrival	*	-
Cash track	*	-
Other terms	*	-
Total purchases	100%	100%

* less than 1 percent.

Source: Manchester, A.C., The Structure of Wholesale Produce Markets, U.S. Department of Agriculture, Economic Research Service, Agr. Econ. Rpt. No. 45, April 1964, pp. 56, 73.

Table 4. Sales Terms for Small and Medium Purchases of Fresh Fruits and Vegetables for Shipping Points, 1939-57.

Terms of sale	(Percent of purchases)	
	[illegible]	[illegible]
F.o.b. shipping point, total	43	35
suitable sliding commission	21	-
shipping point inspection	1	-
shipping point inspection final	1	-
subject to approved-weight conv. inspection	*	-
F.o.b. acceptance	6	8
F.o.b. acceptance final	2	-
F.o.b. inspection and acceptance on arrival	1	4
F.o.b. sale at delivered price	1	-
Delivered sale	14	30
Delivered sale-acceptance and inspection final	*	-
Price on arrival	*	-
Cash track	*	-
Other terms	*	-
Total purchases	100%	100%

* Less than 1 percent.

Source: Armbruster, A.C., The Structure of Independent Terminal U.S. Departments of Agriculture, Terms of Trade [illegible], Agr. Econ. Rpt. No. 45, April 1964, pp. 55, 73.

shipping point market, the F.o.b. sale, and the delivered sale where the seller assumes marketing risks until the product is received at the buyer's plant. Delivered sales are relatively more important than F.o.b. sales in shipping to retailers than to wholesalers. But F.o.b. sales are the most common sales term for purchases by both wholesalers and retailers. What is more important, however, is that through the use of conditional terms granting the buyer product inspection and rejection rights and sometimes deferring price settlement, these apparent complete exchange arrangements may be transformed into incomplete exchanges. For example when either the buyer or seller is uncertain of product quality or expects price to change in transit, the product may be sold conditionally on the acceptance of the buyer or subject to the prevailing price on arrival at the market. Thus adjustments to accomodate risk are possible in the marketing institutions.

At this point one aspect of the entire fresh fruit and vegetable marketing channel can be summarized. By means of the incomplete exchange arrangement in the shipping point selling market coupled with an agency exchange arrangement between the producer and the shipper, it is possible for the product to move completely through the marketing channel without being priced. The length of time for doing so of course varies with the distance of the production from the consuming market. Citrus may move from Florida to the Northern markets overnight; seven days may be required to move some crops from California to New York by rail. In both cases the crop title and market risk under some circumstances may remain with the shipping point firm or

under some circumstances may remain with the shipping point firm or to New York by rail. In both cases the crop title and market risk might; seven days may be required to move some crops from California to New York by rail. In both cases the crop title and market risk course varies with the distance of the production from the consuming market. Citrus may move from Florida to the Northern markets over- channel without being priced. The length of time for doing so of it is possible for the product to move completely through the marketing an agency exchange arrangement between the producer and the shipper, exchange arrangements in the shipping point selling market coupled with marketing channel can be summarized. By means of the incomplete

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shipping point market, the f.o.b. sale, and the delivered sale where

the producer. The implications of this for coordinating the efforts of the production and marketing sectors are of paramount concern to this study; these are taken up in more detail in Chapter 5.

In addition to these exchange terms, other forms of incomplete exchange are observed between shippers and wholesale buyers, but not retailers. The wholesaler may handle the crop on consignment or on a joint account basis. It was estimated that about 27 percent of wholesaler purchases from shipping point markets and local growers were handled on a consignment basis in 1959, and some 2 percent were handled on a joint account basis where the shipper and wholesaler divided profits after marketing costs.[112]

A study of the pricing process between shippers and their buyers is also indicative of the prevalence of incomplete exchange and the effect of market risk for fresh fruit and vegetable trading. Table 5 indicates, necessarily in a very rough manner, the kinds of pricing behavior at this node in the distribution channel. Insofar as can be determined, trading involving overt price bargaining was more prevalent for shippers' sales to wholesalers than for those to retailers.[113] But the difference was not great. What is more importantly shown in the table is the prevalence of exchange arrangements with both

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[112] Manchester, A.C., op. cit., pp. 53, 58.

[113] Retailers also make greater use of the delivered sales term, where ostensibly the major portion of marketing risks fall on the buyer, than do wholesalers. These two observations are in accord with industry representative statements concerning the relative ease and preferences in selling to retail organizations over wholesaler buyers. Not infrequently the following kind of statement was heard: ". . .(retail) buyers on the other hand are not too concerned with the price they pay for produce but they are very concerned that they don't pay more than their competitors." NCFM McAllen, Texas Hearings, June 11-12, p. 231, original transcript.

the producer. The implications of this for coordination of efforts of the production and marketing components of vertical control would seem to this study; these are taken up in more detail in Chapter 5.

In addition to these economic terms, other forms of inducements are observed between shippers and wholesale buyers, but not retailers. The wholesaler may include a drop on containment or on a joint account basis. If the combination plan gives 2% percent of wholesaler purchases from shipping point carlots and local grocers were handled on a carlot cost basis in 1939, and some 3 percent were handled on a joint account basis where the shipper and wholesaler divided profits after marketing costs.[12]

A study of the pricing process between shippers and their buyers is also indicative of the prevalence of incomplete exchange and the effect of marked risk for local limit and vegetable trading. Table 5 indicates, necessarily in a very rough manner, the idea of pricing behavior at this mode in the distribution channel. Insofar as can be determined, trading involving cover price haggling was more prevalent for shippers' sales to wholesalers than for those to producers.[13] But the difference was not great. What is more importantly clear in the table is the prevalence of exclusive agreements with both

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[12]Samuelson, A.G., op. cit., pp. 23, 24.

[13]Retailers also make greater use of the following order type, where ostensibly the major problem of marketing is the sell on the buyer, and preference in selling to retail or wholesale over wholesaler type. [If] [unfavorably the following kind of statement was found: ". . . (retail) buyers on the other hand are not too concerned with the price they pay for produce but they are very particular that they don't pay more than their competitors." Miss Hudson, "Some Hearings," June 11-12, p. 23. original transcript.

Table 5. Survey of the Pricing Process Between Shipping Point Sellers and Wholesalers and Retailers of Fresh Fruits and Vegetables, 1958-59.

Description of Pricing Process	Kind of Buyer: Wholesalers	Retailers
	(percent of shipping point purchases)	
Non-bargained prices	46	66
Shipper quotes a price; buyer accepts or rejects without bargaining	40	51
Price is not discussed; shipper bills at market price for the day	5	15
Shipper quotes price; buyer accepts or rejects without bargaining; if price changes later, shipper bills at new market price	1	-
Bargained prices	48	33
Shipper quotes price; buyer makes counter offer and bargains	39	19
Buyer bargains over price sometimes or with some shippers	9	10[1]
Buyer asks shipper for best quality; then bargains for price	-	4
Other methods	6	1
All purchases	100%	100%

[1]Includes 4 percent of purchases where price bargaining only occurs when the produce is to be used for special sale.

Source: Manchester, A.C., The Structure of Wholesale Produce Markets, U.S. Department of Agriculture, Economic Research Service, Agr. Econ. Rpt. No. 45, April 1964, pp. 56, 74.

Table 5. Survey of the Price Practices Used when Shipping Point Sales are Negotiated as Part of Efforts of Small Firms to Sell Profitably, 1939-42.

Description of Pricing Process	(Percent of shipping point purchases)	
Non-negotiated prices	44	44
Shipper probes a price; buyer accepts or rejects without bargaining	10	4
Price is not discussed; shipper bills at market price for the day	2	12
Shipper probes price; buyer counters or rejects without bargaining; if price changes later, shipper bills at new market price	1	-
Bargained prices	46	56
Shipper quotes price; buyer makes counter offer and bargains	29	19
Buyer names price; some shippers	9	10[a]
Buyer sells shipper for best quality; then bargains for price	-	4
Other methods	4	1
All purchases	100%	100%

[a] Includes 4 percent of purchases where price bargaining only occurs when the produce is to be used for special sale.

Source: Manchester, A.C., The Distribution of Agricultural Products, U.S. Department of Agriculture, Agricultural Marketing Service, Washington, D.C., Agricultural Economics Research, Report No. 4, April 1949, pp. 25, 26.

wholesalers and retailers which are subject to negotiation or renegotiation after the trade. The true extent of incomplete exchange cannot be known from Table 5 because the terms of the sale following this bargaining process may still transform what appears to be a final sale into an incomplete exchange.

In summary the bargaining processes and institutional arrangements at this market level reflect attempts at accommodation of market risks in much the manner that the incomplete exchange arrangements and forms of integration do at the producer-shipper market level. Product risk is less at this level since production costs are not at stake. Yet the institutional market structure and the behavior of firms in the pricing process do not reflect diminished market risks. While it is true the incidence of production risks and costs is transferred to the shipping point selling market by means of crops in which the shipper has a financial interest, it is also true a sizable portion of the crops sold have no shipper interest, and the shipper is guaranteed a fixed marketing costs for his efforts upon acceptance of the product.

The Wholesale Terminal Market. Interposed between the shipping point and retail market sectors, the terminal markets for fresh fruits and vegetables have historically played a major marketing role in the industry. Their principal function is to receive carlot shipments from the shipping point markets and parcel these supplies to nearby retailers. For specializing in this function these markets have received the principal effect of contemporary changes in fresh fruit and vegetable marketing channels, particularly those trends more

withdrawal and retail are ridden and just to maintain or
reestablish a foothold on the trade. The term brand of a duplicate product
cannot be known from trade's because the terms of the sale differ by
this bargaining process may still transform what appears to be a final
sale into an intermediate exchange.

In summary the bargaining processes and institutional arrangements
at this market level reflect changes in economization of market risks
in much the manner that the duopolistic model's structure and form
of interaction do at the producer-shipper market level. However much
is lacks at this level since production costs are not at stake. The
the institutional market structures and the behavior of firms in the
pricing process do not reflect technical market rules. While it is
true the influence of production risks and costs is transferred to the
shipping point selling market by means of crops in which the shipper
has a financial interest, it is also true a sizable portion of the
crops sold have no risk to harvest, and the shipper is guaranteed a
fixed marketing costs for the effects upon specific of the product.

The Wholesale Terminal Market. The general behavior the shipping point
and retail market remains, the terminal markets for fresh fruits and
vegetables have historically played a major marketing role in the
industry. Their predicted function is to receive carlot shipments
from the shipping point markets and parcel these supplies to nearby
retailers. Now specialized in this function these markets have
received the profound effect of contemporary changes in the fresh
and vegetable marketing channels, particularly those trends

closely associating the retail sector with the shipping point sector.[114] The wholesale terminal markets at times merge inseparably with the shipping point markets; in the major fresh fruit and vegetable producing areas markets may serve alternatively with the seasons as shipping point markets and terminal markets. And even where the two markets are not one and the same, the only difference between them is distance so that their marketing functions are inseparable, except for the break-bulk function.

Two major structural changes in these markets may be mentioned. The declining industry role of this sector has encouraged the enterprise combination of the receiving and break-bulk marketing functions, historically separate in the forms of receivers and jobbers. The resulting service wholesaler firm has shown the greatest growth and vitality of all wholesalers in these markets. It is to be noted that such enterprise combination places a single firm in both the procurement and selling markets of these markets. The success of these firms lies mainly in their providing services to retailers which are best performed in the centralized wholesale markets and in their service to the institutional market. But the consequent coordination of buying and selling of this enterprise combination should not be overlooked in the success of these firms.

The second major structural change in this market is concerned

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[114] Chapter 4 of the NCFM Technical Report, No. 4 described the trends in these terminal markets and their adjustments to direct sales to retailers in more detail than is given here. A brief description of these would include a decline in the number of auction facilities, an absolute decline in the number of wholesalers and a rapid growth of those firms surviving, and a tendency for surviving firms to assume and innovate marketing services in order to assure their place in the channel.

closely associating this model vector with the emerging point vector. The wholesale terminal markets of Memphis, Tennessee, with its adjoining point markets in this major fresh fruit and vegetable producing areas would serve alternatively with the shipping point model as the terminal market. We can view these two markets are not one and the same, the only difference between them is distance so that their marketing functions are interrelated, except for the break-bulk function.

Two major structural changes in these markets may be mentioned. The declining industry role of this vendor has encouraged the corporate combination of the receiving and break-bulk marketing functions, hitherto typically separate in the form of specialty and jobber. The resulting service wholesaler firm has given the greatest growth and vitality of all wholesalers in these markets. It is to be noted that such enterprise combination places a single firm in both the procurement and selling markets of these regions. The success of these firms lies mainly in their proximity service to problems which are least performed in the conventional wholesale markets and in their service to the institutional market. And the consequent coordination of buying and selling of this enterprise economy function should be overlooked in the success of these firms.

The second major structural change in this market is concerned

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[1]Chapter 4 of the 1956 Technical Report, Mo. A. Agricultural Marketing in these terminal markets are their proximity to demand value to retailers in more detail than is given here. A list of marketing functions of these would include a description in the manner of modern facilities, an accurate outline in the manner of retail markets and a report of those firms surviving, and a summary for surviving firms to change and improve more fully service in order to survive their place in the channel.

with its historical role in industry pricing. The growth of direct marketing from shippers to retailers eliminates the need for these wholesalers except to serve the small retailer not able to buy direct from shipping point, the institutional market, and the specialty needs of large retailers. Coupled with the loss of the auctions, market institutions principally patronized by sellers and buyers of fruits in the past, this loss in trade of the wholesale terminal markets shifted the locus of pricing from the consumption markets where the terminal markets are located to the shipping point markets where the major buyers and a large share of crops are located and sold.

The extent of wholesaler integration into shipping point markets or into production operations is not great. It was estimated some 3 percent of wholesale terminal market firms were vertically integrated into shipping point markets in 1958.[115] About one-half of these were integrated into the production of fresh fruits and vegetables and one-half into shipping packing operations.[116] There is no evidence of a trend in this form of integration; over the 1955-65 period the number of shippers and grower-shippers integrated with wholesalers increased by only 20 firms.[117]

A number of factors are operating to even further reduce the importance of the wholesale terminal market from its estimated share

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[115] Manchester, A.C., op. cit., p. 20.

[116] Ibid.

[117] NCFM Technical Report, No. 4, p. 59.

with its bisected rail in driveway pavement. The growth of trade resulting from a city's ease to transfer cotton bales from shipping point, the inscribed track, and the possibility more of large railcars. A plant with a line of bins a quarter, mounted institutions primarily patronized by a different cross section of Dublin in the past, this done in turn of the volume handled increased the loans of people from the co-operation may also share the terminal markets are loaned to the shipping point's markets where the major buyers and a large share of crops are located may call.

The extent of wholesale investigation into shipping points whether or into production operations is not known. In one estimated some 3 percent of wholesale terminal used of these were additionally interested into shipping point markets in 1923.[113] About one-half of these were integrated into the production of fresh fruits and vegetables and one-half into shipping packing operations.[114] There is no evidence of a trend in the form of integration; over the 1919-49 period the number of shippers and grower-shippers interviewed by only 30 firms.[115]

A number of factors are operating to even further reduce the importance of the wholesale terminal markets from the estimated share

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[113] Manchester, A.C., Op. cit., p. 30.

[114] Ibid.

[115] Ibid., No. 4, p. 7.

of 57 percent of shipping point sales today.[118] Even for those retailers not large enough to operate branch buying offices in the major shipping point markets, the shipping point buying broker represents an alternative and competitive manner of securing direct sales. Then too there are shippers and brokers specializing in mixed loads and buyer-pool loads from shipping point which any sized retailer can take advantage of. Another alternative for the small retailer and the institutional buyer is to form or join a cooperative wholesaling firm large enough to purchase direct from shipping point. All these will further decrease the importance of this market sector in the future. Consequently, beyond its contribution to enterprise combination in the market channel and the locus of the industry pricing forces — both important to channel coordination — the terminal market will not be further discussed here.

The Retail Market Sector. With respect to the marketing alternatives at the retail level it is noteworthy that the concentration of sales and resulting effects have different bases on the buying and selling sides of the market. The food retail chainstore organization trend has been principally responsible for changes in the selling concentration

[118] Manchester estimated that retail direct buying from shipping point markets might increase from 20 percent to 33 percent of shipping point sales over the 1964-76 period; op. cit., p. viii. The discrepancy of his current estimate from the Census figure above comes from his concern with retail purchases from shipping point without the aid of an intermediary agency or broker whereas the Census figure deals with receipts from shipping point which includes purchases through brokers and agencies. For purposes of examining and estimating the bypassing of the wholesale terminal markets the Census figure is the correct one. By definition Manchester's estimate excludes the affect of the shipping point brokers which will have the greatest effect on the loss of trade in the terminal markets.

of 17 percent of slightly pink cotton today.[11a] Even for those
retailers not large enough to operate their own buying offices in the
major shipping ports, the shipping point buying factor represents
quite an alternative and cost-saving manner of purchasing fibers rather
than too there are obligations and costs specifically in their favor
and buyer-pool logic from shipping point which any mixed retailer can
take advantage of. Another alternative for this small retailer and
the institutional buyer is to form or join a cooperative wholesaling
firm large enough to purchase direct from shipping points. All these
will further decrease the importance of this market center in the
future. Consequently, beyond its contribution to understanding coordina-
tion in the market of mixed and its locus of the industry pricing
forces — both important to classical economic theory — the terminal market
will not be further discussed here.

The Retail Market Center. With respect to the marketing efficiencies
at the retail level it is noteworthy also the coordination of sales
and resulting efforts have different bases on the buying and selling
sides of the market. The food retail chainstore organization type
has been particularly responsible for closure in the selling coordination

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[11a] Remember emphasized that retail stores buying from shipping points
made the with increase from 20 percent to 33 percent of city's
point sales over the 1939-43 period; pp. cit., p. viii. The discour-
agement of the current ceilings from the levels fixed over a
from the concern with retail promotion from shipping point volume
the aid of an intermediary a buyer or supply or reverse the course figure
deals with from this shipping point with including promotion pro-
through brokers and agencies. For purposes of our present analy-
reading the appearing of the wholesale for retail remains the same a
figure is the correct one. If inflation reverses the picture
evaluates the effect of the shipping point buyers which will have
the greatest effect on the locus of time in the terminal markets.

of retailers; the growth of group wholesalers and other kinds of buying groups has been a more important source of retail concentration in factor markets.[119] For the purposes here only the latter concentration is of interest.

Table 6 illustrates a conventional classification of the various kinds of retailers and retail groups. While this classification does indicate the extent of retail purchasing by kinds of firms, it will become clear that this classification does not segregate retailers by forms of economic organization of greatest interest to this study. According to the table all retailers received about one-half of their supplies direct from shipping point markets in 1959. The other one-half was purchased from local growers and wholesalers. Further, the importance of shipping point receipts was considerably higher for national and regional chainstore organizations than for the other kinds of firms.

Figure 1 shows the placement of the branch buying offices of retail organizations in the fresh produce distribution channel. The national chainstore organizations rely on these branch buying offices in the shipping point markets for most of their purchases from these markets. For that portion of supplies not purchased from shipping point markets, either through these branch buying offices, from brokers or from shippers direct, the chainstores and retail organizations purchase from local growers and terminal markets. Table 7 indicates the relationship of chainstore size and procurement methods as well as the lack of chainstore integration into shipping point markets here represented by assembly

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[119] NCFM Technical Report No. 7, p. 59.

[120] M. Boshard and J. Goret, loc. cit., p. 62.

Table 6. **Sources of Retail Fresh Fruit and Vegetable Supplies, By Kinds of Retailers, 1958-59.**

Kinds of Retailers	Supply Sources			
	Shipping Point Markets	Local Growers	Wholesalers[1]	Total Supplies
	percent of total			
National chainstores	70	8	22	100
Regional chainstores	52	8	40	100
Local chainstores				
with warehouses	28	4	68	100
without warehouses	1	1	98	100
Retail cooperatives	21	6	73	100
Voluntary groups	30	6	64	100
All retailers	50	6	44	100

[1]Includes out-of-town wholesalers, local wholesalers, brokers, and sales agencies.

Source: Manchester, A.C., The Structure of Wholesale Produce Markets, U.S. Department of Agriculture, Economic Research Service, Agr. Econ. Rpt. 45, April 1964, p. 71.

Table 6. Source of total fast food and vegetable consumption, by time of day, 1994-96

Time of day	Fast food		Vegetables	
	Percent of consumption	Percent of total consumption	Percent of consumption	Percent of total consumption
Total	100	13	100	22
6:00 a.m.-9:59 a.m.	8	8	4	12
10:00 a.m.-1:59 p.m.	29	15	19	19
2:00 p.m.-5:59 p.m.	24	12	23	20
6:00 p.m.-9:59 p.m.	33	14	44	26
10:00 p.m.-5:59 a.m.	6	11	10	25

SOURCE: Economic Research Service, USDA, Continuing Survey of Food Intakes by Individuals, 1994-96.

Table 7. Retail Chainstore Fresh Fruit and Vegetable Supply Sources, by Size of Firm, 1958.[1]

Source of Supplies	Size of Chainstore Organization (million $)						All Firms
	less than 10	10-24	25-49	50-99	100-499	500 or more	
	percent of value of supplies						
Assembly Plants							
Company owned	0	0	0	0	0	*	*
Independent	48.4	60.9	84.9	87.9	99.4	99.8	95.9
Wholesalers							
Voluntary and cooperative	7.4	4.3	0	0	*	0	0.3
Service Whlse.	40.0	22.3	10.7	7.3	0	0.2	2.5
Affiliated	4.2	12.5	4.4	4.8	0.6	0	1.3
Total supplies	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Base (million $)	9.5	46.3	68.0	118.8	249.8	751.0	1,243.4

[1]Produce includes small quantities of flowers. Chainstores are corporations with 11 or more stores. 156 such organizations are reported here.

*Less than 0.05 percent or $50,000.

Source: Economic Inquiry into Food Marketing, Part 1, "Concentration and Integration in Retailing", staff report to the Federal Trade Commission, U.S. Government Printing Office, January 1960, pp. 254-274.

Table 7. Retail Organic Fresh and Vegetable Supply Source, by Size of Farm, 1978

Source of Supply	Size of Farm (Million $)						All Farms
	Less than $50,000	$50,000-$99,999	$100,000-$249,999	$250,000-$499,999	$500,000-$999,999	$1,000,000 or more	
	Percent						
Farm Operations, Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sold Through Roadside Stands	0	0	0	0	0	*	*
Sold Through Farmers' Markets	0	0	0	0	0	*	*
Sold Through Other Direct Marketing Channels	0.3	0.5	0.7	0.8	0.5	0.2	0.5
Sold Through Wholesale Channels	99.7	99.5	99.3	99.2	99.5	99.8	99.5
Sold Through Processors	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Sold Through Other Channels	0.1	0.3	0.5	0.6	0.3	0.1	0.3

Source: Economic Research Service, USDA, "Organic Farming in the United States," Publication No. 780, Washington, D.C., 1978.

* Less than 0.05 percent.

plants. The table indicates not only that the share of supplies of these firms purchased from shipping point increases with firm size until the very largest are purchasing virtually all supplies from shipping point but also the importance of the service wholesalers to the smaller chainstores.

Procurement organization of the major retailers as opposed to those principally supplied by local growers and wholesalers is of principal interest here because of the general trend toward this form of procurement.[120] This organization has as its goals the procurement of large quantities of fresh produce by a single firm and the provision of market information to the firm. For the three largest national chainstore organizations, the A&P, Safeway and Kroger Companies, accounting for 90 percent of all shipping point branch buying offices operated by retail firms, procurement organization and policies are similar. Their centralized procurement emphasizes these field offices in the major producing areas and a central buying office to which retail store and divisional needs are forwarded and filled either by telephone contact with shippers or through the branch buying offices. In most cases the requisition begins with the local retail store but the area of purchase, brand, and total quantities purchased are decided by the central purchasing office; the matching of retail needs with supply, then, and price negotiations take place in the shipping point market but are coordinated by the central purchasing office.

[120] The following description of retail procurement policy is drawn from informal and unpublished NCFM staff studies. A detailed description of the Safeway Company's procurement organization and policy is contained in: NCFM McAllen, Texas Hearings, June 11-12, pp. 380-421. For a description of the Kroger Company's fresh produce buying division, Wesco, Inc., see: Carew, J., "We Analyze Chain Buying" American Vegetable Grower, Nov. and Dec. issues, 1960.

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[130]The following description of retail procurement policy is drawn from informal and unpublished MAC audit studies. A detailed description of the Safeway Company's procurement organization and policy is contained in: Myron Gordon, "Safeway Stores," Case Problems in Marketing, Boston University, 1950, pp. 270-271. For a description of the Kroger Company's fresh produce buying activities, see: Carew, d., "The Analyze Chain Buying " Agriculture Marketable Answer, Nov. and Dec. January, 1950.

When supplies of fresh fruits and vegetables are particularly heavy, the matching of supplies with local retail store needs is somewhat different. Either because it has been so informed by producers and shippers or by its branch buying offices that heavy supplies are anticipated, the central office may encourage special promotion in the local stores. Under these circumstances the flow of information reverses in the channel and the state of supply may be said to influence consumer demand through changes in retail merchandising and pricing. But this is the exceptional case; normally the flow of information is from the retail store, dictated to an extent by supply, seasonal, and consumption constraints, back to the shipping point market and the producer.

The establishment of branch buying offices and direct procurement from shipping point markets is stimulated at least as much by market risk and uncertainty as cost considerations. As shown in Table 1 there is no recent trend toward establishing more of these buying offices; and most of the firms now operating such offices do not foresee appreciable expansion of them in the future.[121] Increased shipping point buying will result from greater use of the brokerage concerns, and this, coupled with the fact that regional and local chainstore organizations now compete successfully with larger retailers using brokers rather than buying offices, is indicative that branch buying

[121] Only the very large, national concerns could support a national network of these branch buying offices. One estimate is that the firm must purchase 7 to 12 carlot equivalents per week from a particular area to justify such an office. As most shipping point markets specialize in one or a few crops, only the very large retailers could possibly dispose of such volumes in their retail outlets.

When supplies of fresh fruits and vegetables are particularly heavy, the marketing of surplus with local retail stores tends to encounter what difference. Either because it has been so informed by producers and shippers or by the branch buying office that heavy supplies are anticipated, the central office may encourage special promotion in the local stores. Under these circumstances the flow of information reverses in the channel and the state of supply may be said to influence consumer demand through changes in retail merchandising and pricing. But this is the exceptional case; more often the flow of information is from the retail store, located to an extent by supply, economic, and consumption considerations, back to the shipping point market and the producer.

The establishment of branch buying offices and direct procurement from shipping point markets is abandoned at least as much by reason of risk and uncertainty as cost considerations. As shown in Table I there is no record there toward establishing more of these buying offices; and most of the firms now operating such offices do not foresee appreciable expansion of them in the future.[10] Increased shipping point buying will result from greater use of the brokerage concern, all this, coupled with the fact that regional and local organizations now compete successfully with larger receivers using

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[10] Only the very large, national concerns would support a national network of these branch buying offices. One estimate is that the firm must purchase 2 to 10 carlot equivalents per week from a particular area to justify such an office. As such shipping points number perhaps in one or a few areas, only the very large can be fully

offices provide no appreciable economies over the use of shipping point brokers. Of the reasons for operating these branch buying offices, the need for insuring supplies of consistently high quality and the desire for market flexibility in order to obtain supplies from as many potential sources as possible are most often mentioned.

The procurement operations of the regional and local chainstore organizations dealing with smaller quantities place less emphasis on permanent offices in the major producing areas. They may have transient buying offices. But a major difference is that while these organizations also attempt to centralize their purchases they provide in general wider latitude for the local store or division to secure supplies in whatever manner is deemed best. Because they have no fixed investment in any one shipping point market offices, they are believed to be more flexible in procurement. They make greater use of the brokers than do their national counterparts. In this sense they are in a better position to alter area purchasing patterns providing they have the information on which to do so.

This centralization of procurement activities along with pricing and margin policies of the retail market sector is the important organizational characteristic of this market level for the present study. It can influence the retail store's responsiveness to consumer demand just as it determines the flexibility of the retail organization to unexpected changes in supplies. There are two competing forms of organization involved here: centralized and decentralized. If it is true that neither posseses a clear cost advantage or other competitive advantage, then the persistence of both may be taken as an indication

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they are equally appropriate adjustments in market organization for the retail sector.

In summary fresh fruit and vegetable marketing channels are complex. There are a number of marketing alternatives at each market level, a great disparity in enterprise conbination within the various market levels, and a number of institutional structures clearly aimed at the accommodation or reduction of market risk. The flow of market information and the rigidity of the pricing process are themselves uncertain. Some institutions can be associated with product perishability and market urgency, but these are invariably accompanied by some uncertainty in the pricing process and risk incidence. There is considerable interdependence of the vertically-related market levels because of this perishability and the prevalence of incomplete exchange.

The large number of enterprise combinations, exchange arrangements, and integrated structures described in this chapter represent at the same time responses on the part of the industry to the need for market coordination and threats to that coordination. Some trends — the growth of the service wholesaler, integration of the production and shipping point market sectors, and centralized procurement by retailers — would be expected to enhance coordination of the various market levels. The effects on coordination of other trends such as direct marketing and the demise of the central wholesale markets are less certain. But all such developments can be expected to influence vertical market coordination in some manner. Measurement of these effects is the subject of later chapters.

they are equally appropriate adjustments in market organization for the retail sector.

In summary these are various possible evolutionary changes -- Level, a great capacity to engage more customers within the various market levels, and a number of institutional characteristics at the accommodation or reduction of conflict risk. The flow of information and the rapidity of the pricing process are already even uncertain. Some institutions can be associated with important stability and market urgency, but these are inevitably associated, some uncertainty in the pricing process and risk functions. There is considerable interdependence of the vertically-related market levels because of this potentiality and the general use of independent behavior. The large number of competitive relations, according simplifying and integrated structures described in this chapter happened at the same time responses on the part of the industry to the need for market coordination and tried to that coordination. Four forces -- the growth of the service wholesaler, integration of the production and shipping point market sectors, and centralized procurement by retailers -- would be expected to enhance coordination of the various market levels. The effects on coordination of other trends such as direct marketing and the demise of the central wholesale markets are less certain. But all such developments can be expected to influence vertical market coordination in some manner. Discussions of these effects is the subject of later chapters.

Chapter 4.

HISTORICAL PRICE STRUCTURE AND STABILITY IN THE FRESH FRUIT AND VEGETABLE INDUSTRY

The purpose of this chapter is to examine the historical record of price stability in the fresh produce industry. This necessitates a review of the kinds of stability of interest to the study as well as a comparison of the farm price stability of fresh fruits and vegetables with other food crops. In accordance with the tripartite division of the marketing effort, three kinds of stability may be defined: (1) price stability over time; (2) stability over product forms; and (3) spatial stability or price stability over geographic markets. Of these, the first receives the most attention here, but the others also are important to market coordination and resource allocation.

Temporal Stability. A common unit of analysis in the study of price stability over time is the year. This reflects not only the quality of data available for shorter time periods but also the consideration that agricultural adjustments in production are more observable in the long-run than for periods shorter than the year.[122] The presumed source of market instability will influence the choice of data intervals also. Changes in yield and output are the principal causes of short-run price changes; if other factors are believed to affect long-run price stability a sufficient period of time must be allowed for

[122]There are a number of production adjustments in the fresh produce industry relevant to the less-than-one-year-run. These include crop abandonment, fertiliser and insecticide use, intensity of cultivation and harvesting, growth and maturity stimulants and depressants, and others. Biologically more of these adjustments are possible for short-term vegetable crops than for fruit crops, but even for fruit there are a number of short-run adjustments possible.

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Temporal Stability. A common unit of analysis in the study of price stability over time is the year. This reflects not only the quality of data available for shorter time periods but also the consideration that adjustment adjustments in production are more observable in the long-run than for periods shorter than the year.[22] The presence of market inertia will influence the choice of data intervals also. Changes in yield and output are the principal causes of short-run price changes; if other factors are believed to affect long-run price stability a sufficient period of time must be allowed for

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[22]There are a number of production adjustments in the fresh produce industry referant to the less-than-one-year-run. These include crop abandonment, fertilizer and insecticide use, intensity of cultivation and irrigation, pruning and thinning practices and depressants, and others. Biologically more of these adjustments are possible for short-term vegetable crops than for fruit crops, but even for fruit there are a number of short-run adjustments possible.

these structural changes to occur.

Time series data may be decomposed into trend, cyclical, seasonal, and irregular movements. This decomposition into regular and less predictable components of price changes is relevant to the study of the role of price as a mechanism of market coordination. Trend, seasonal and cyclical movements of economic time series, by definition and construction, are reoccurring movements or movements changing at a constant rate and subject to various degrees of predictability. In contrast irregular movements are a residual category of non-reoccurring movements representing serial instability which cannot be predicted on the basis of historical data. The implications of this decomposition of time series data for the study of farm price stability should be clear. Providing producers have access to historical data and experience and the profit incentives exist for adjustment, resources can be adjusted more or less satisfactorily to trend, cyclical and seasonal price movements if they are known. And the extent of irregular price movements defines the price variation which is not predictable, hence contributes to the problems of market coordination and resource allocation.

Irregular price movements, however, are not completely free of prediction. Those having their source in crop freezes or droughts may be subject to prediction by those producers with considerable market experience or by public research. But if such are predictable there remains sufficient uncertainty that no a priori resource adjustments are discernible. Nor are all non-irregular movements subject to prediction. There are sometimes drastic and sometimes gradual changes in seasonal and cyclical price movements originating in

changes in seasonal and cyclical price movements originating in these structural changes to occur.

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production technology or consumer preferences which are not predictable.[123] The predictive dichotomy of irregular and non-irregular price movements is one of degree, not of kind.

The four kinds of price movements differ in the length of time period under consideration. A trend may be considered to cover a number of years and may be adequately approximated by the long-run average price. Cyclical movements are periodically shorter than the trend but may also cover a number of years.[124] Seasonal variation, of course, refers to movements of prices within a calendar or crop year. Irregular movements are residual movements and may appear as deviations from seasonal averages, cyclical relatives or the trend.

Although related somewhat to time periods, the decomposed elements of price movements are little aid in separating the contribution of supply changes and structural demand changes to price stability. Price trends may be viewed as joint products of supply variation and demand change as may seasonal movements. And while cyclical price movements are normally attributed to supply characteristics, irregular movements may originate in either the demand or supply sectors. For example, the Korean conflict is suggested as a change in demand contributing to the market stability of fresh fruits and vegetables in Figure 4 while crop freezes are also identified with changes in stability. Nevertheless it is instructive to review that is known of

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[123] For example the post-war substitution of processed for fresh forms of fruits and vegetables in the diet and the substitution of purchased for home-grown produce probably decreased seasonal price variations for the market basket of fruits and vegetables.

[124] For example, see: French, B.C., Bressler, R.G., "The Lemon Cycle", Journal of Farm Economics, 44:1021-36, Nov. 1962.

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trend, cyclical and seasonal movements of fresh fruit and vegetable prices.

Table 8 shows the annual stability of fresh fruit and vegetable prices compared with other farm products. Care must be exercised because the levels of aggregation vary among the categories given in Table 8, but over the 1957-65 period prices of livestock did not change by more than 5 percent from the 1957-59 average; prices of all crops did not fluctuate more than 7 percent from that average. But prices of fresh fruit fluctuated on the average 15 percent per year from the mean. The index of fresh vegetable prices, marked by a pronounced upward trend, was somewhat more stable than this but still less stable than for other food crops.

Table 9 indicates the relative importance of seasonal and irregular price movements for a number of farm products. The decomposition of farm prices was accomplished using a ratio-to-moving average method. The figures in Table 9 are average, absolute month to month percentage changes in these time series components. The data indicate first that original price movements are more variable for fresh vegetables than for fresh fruits and secondly that the seasonal and irregular movements for fresh vegetables exceed those of fruits. Original, seasonal and irregular price movements for a market basket of fresh produce are all greater than for other food products shown in Table 9. In addition the relative importance of seasonal movements to original movements is less and the contribution of irregular movements to original movements more for this market basket than for the other products.

The percentage of the original movements associated with irregular

trend, cyclical and seasonal movements of fresh fruit and vegetable prices.

Table 8 shows the annual variability of fresh fruit and vegetable prices compared with other farm products. Corn must be excluded because the levels of aggregation vary more than the data given in Table 8, but over the 1927-65 period prices of livestock did not change by more than 5 percent from the 1927-37 averages; prices of all crops did not fluctuate more than 7 percent from that average. But prices of fresh fruit fluctuated on the average 19 percent per year from the mean. The index of fresh vegetable prices, marked by a pronounced upward trend, was somewhat more stable than this but still less stable than for other food crops.

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The percentage of the original movements associated with irregular

Table 8. Index of Prices Received by Farmers for Fresh Fruits and Vegetables and other Farm Products, 1935-65.

Commodity	1935-39 av.	1947-49 av.	1957-59 av.	1960	1961	1962	1963	1964	1965	1960-65 av.
				1957-59 = 100						
Fresh Fruit[1]	40	80	100	108	111	98	129	135	108	115
Fresh Vegetables[2]	42	98	100	100	95	107	106	112	117	106
All Farm Products	45	112	100	98	99	100	100	98	102	100
All Crops	44	111	100	99	101	103	107	107	104	104
Livestock and Products	45	113	100	98	97	99	95	90	100	97

[1]Includes processed citrus fruits.

[2]Excludes potatoes, sweet potatoes and dry edible beans.

Source: Agricultural Prices, U.S. Department of Agriculture, Statistical Reporting Service, monthly.

Table 8. Index of Price Changes Received by Wheat Farmers and Paid by Wage Earners in Selected Countries, 1932-1937

Country	1932	1933	1934	1935	1936	1937
	Percentage of 65-1927 = 100					
Argentina	65	84	86	87	87	87
Australia	57	62	69	71	71	71
Canada	50	51	56	58	58	58
Chile	100	100	100	100	100	100
Denmark	100	100	100	100	100	100
France	100	100	100	100	100	100
Germany	100	100	100	100	100	100
Hungary	100	100	100	100	100	100
India	100	100	100	100	100	100
Italy	100	100	100	100	100	100
Netherlands	100	100	100	100	100	100
New Zealand	100	100	100	100	100	100
Norway	100	100	100	100	100	100
Poland	100	100	100	100	100	100
Rumania	100	100	100	100	100	100
Sweden	100	100	100	100	100	100
United Kingdom	100	100	100	100	100	100
United States	100	100	100	100	100	100
Yugoslavia	100	100	100	100	100	100
Index of wheat prices	65-1927	65-1927	65-1927	65-1927	65-1927	65-1927
	57	62	68	72	72	72
Index of wage rates	1929	1929	1929	1929	1929	1929
	100	100	100	100	100	100

Source: Agricultural Prices, U.S. Department of Agriculture, Bureau of Agricultural Economics, mimeo. pp. 1-2.

Table 9. Relative Importance of Seasonal and Irregular Farm Price Movements for Selected Food Products, 1947-58.

Commodity	Original Movements[1]	Seasonal Movements	Irregular Movements
	-- AVERAGE MONTHLY PERCENTAGE CHANGE IN COMPONENT --		
Fresh fruits, vegetables	6.8	4.4	4.5
Meat products	3.4	2.3	1.8
Dairy products	1.7	1.3	0.5
Eggs	6.1	4.1	3.5
Market basket of food	1.8	1.0	1.0
Fresh vegetables	10.5	6.7	7.1
green beans	23.2	13.9	16.1
cabbage	31.9	12.4	27.5
lettuce	28.8	12.5	23.6
tomatoes[2]	32.3	21.3	19.2
carrots	18.8	13.3	11.0
onions	22.7	11.5	17.1
sweet potatoes	10.7	8.8	5.1
potatoes	11.6	5.3	7.5
Relative Movements:	**Seasonal / Original**	**Irregular / Original**	**Irregular / Seasonal**
	------- PERCENT -------		
Fresh fruits, vegetables	64	66	103
Meat products	67	52	78
Dairy products	76	31	41
Eggs	66	57	86
Market basket of food	57	55	96
Fresh vegetables	63	67	106

[1] Includes trend, seasonal, cyclical and irregular price movements.

[2] 1950-58 only.

Source: Gale, H.F., Seasonal Variation in Farm Food Prices and Price Spreads, U.S. Department of Agriculture, Miscellaneous Publication No. 840, June, 1961, pp. 9-10.

Table 9. Relative Importance of Seasonal and Irregular Farm Price Movements for Selected Food Products, 1947-58.

Commodity	Original Movements[1]	Seasonal Movements	Irregular Movements
	- - PERCENT OF TOTAL MOVEMENT IN COMPONENT - -		
Fresh fruits, vegetables	6.8	4.4	4.5
Meat products	3.4	2.3	1.8
Dairy products	1.7	1.3	0.5
Eggs	6.1	4.1	3.5
Market basket of food	1.8	1.0	1.0
Fresh vegetables	10.5	6.7	7.1
green beans	23.2	13.9	16.1
cabbage	31.9	12.4	27.5
lettuce	29.8	12.5	23.6
tomatoes[2]	32.3	11.3	19.2
carrots	18.8	13.3	11.0
onions	22.7	11.5	17.1
sweet potatoes	10.7	6.8	5.1
potatoes	11.6	5.3	7.5
Relative Movements:	Seasonal / Original	Irregular / Original	Irregular / Seasonal
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Eggs	55	57	86
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Fresh vegetables	63	67	106

[1] Includes trend, seasonal, cyclical and irregular price movements.

[2] 1930-58 only.

Source: Dale, H.F., Seasonal Variation in Farm Food Prices and Price Spreads, U.S. Department of Agriculture, Miscellaneous Publication No. 810, June, 1961, pp. 9-10.

movements of the separate fresh vegetables given in Table 9 varies from .86 for cabbage to .58 for carrots. One hypothesis for these crop variations might be the susceptibility of the crop to adverse weather conditions affecting either supplies or consumer demand. The demand for lettuce and a number of other vegetables is known to be sensitive to temperature changes as is harvest quantity and quality. The demand for tomatoes would be less sensitibive to temperature, but this crop would rank just below lettuce in terms of perishability and effect of weather on the harvest. As an indication of the relative contribution of supply-induced irregular movements and those originating in demand, it can be noted the ratio of irregular to original price movements was .82 for lettuce and .59 for tomatoes.[125] And the ratio of irregular to seasonal movements, indicating something of the relative predictability of total movements, was twice as large for lettuce as for tomatoes.

The alternative hypothesis to be tested is that the original movements have their origin in the marketing sector for fresh fruits and vegetables. A test of this hypothesis allowing the geographic concentration of production to represent the length and complexity of the marketing system can be made. The perishability and harvest sensitivity of lettuce and cabbage are comparable. These two crops exhibit the largest irregular component of price variation, yet 58 percent of the annual supply of lettuce and only 18 percent of cabbage is produced in one state. Thus, cabbage is a locally grown crop, often sold direct to retailers by growers, while lettuce moves through the entire complex

[125] But only a rough indication since the geographic concentration of lettuce production is considerably greater than that of tomatoes.

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marketing channel described in Chapter 3. Yet both are marked by large irregular price movements. The hypothesis that the different marketing channels taken by the crop are responsible for these irregular movements based on this gross data and quantification of the complexity of the marketing channel is not supported by this case.

Figure 2 illustrates the post-war trends in the variation of returns, prices, acreage, yield and domestic production of fresh vegetable crops.[126] The five year average annual percentage changes are squared in order to avoid negative changes. The trends are plotted in the manner of a moving average with the data for each succeeding five year period plotted on the fifth year of the period. There was a slight reduction in the calculated variation of yield, acreage, and production over the 1946-64 period, but these have been largely stable since 1955. The most notable change in Figure 2 is the reduction in the variance of farm income over this period, especially from the 1953 high. The data indicate this stability of returns occurred despite any noticable change in the nominal farm price variations for fresh vegetables. The relation between price and income stability apparent until 1954 seems to have weakened after that year. This indicates a change in the aggregate elasticity of demand for these crops toward unity.

The trend in price variability for fresh vegetables over the 1946-64 period consisted of a rather stable 1954-57 period between periods of high price variation during 1946-54 and 1957-64. There does not appear to be any trend in the supply variables, domestic production,

[126] The limited period for which aggregate fresh fruit prices are available and published separately from processed fruit prices precludes similar figures for fresh fruit price and output data.

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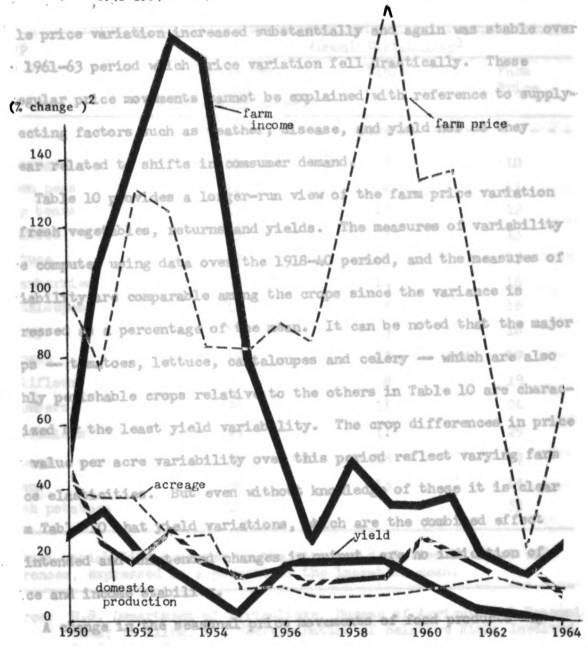
Figure 2 illustrates the post-war trends in the variation of returns, prices, acreage, yield and domestic production of fresh vegetable crops.[156] The five year average annual percentage changes are squared in order to avoid negative changes. The trends are plotted in the manner of a moving average with the data for each succeeding five year period plotted on the fifth year of the period. There was a slight reduction in the calculated variation of yield, acreage, and production over the 1946-54 period, but these have been largely stable since 1955. The most notable change in Figure 2 is the reduction in the variance of farm income over this period, especially from the 1953 high. The data indicate this stability of returns occurred despite any noticable change in the nominal farm price variations for fresh vegetables. The relation between price and income stability apparent until 1954 seems to have weakened after that year. This indicates a change in the aggregate elasticity of demand for these crops toward unity.

The trend in price variability for fresh vegetables over the 1946-64 period contrasted of a rather stable 1954-57 period between periods of high price variation during 1946-54 and 1957-64. There does not appear to be any trend in the supply variables, domestic production.

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[156]The limited period for which aggregate fresh fruit prices are available and published separately from processed fruit prices precludes similar figures for fresh fruit price and output data.

Figure 2. Stability of Fresh Vegetable Farm Prices, Income and Supplies, 1946-1964



Source: U.S. Department of Agriculture, Statistical Reporting Service, Agricultural Statistics, annual. The data is for 28 major fresh vegetable crops. Production includes some quantities not marketed due to low prices or other economic factors. Stability is calculated as the average percentage change in each series, squared, over successive five year periods. This variance for each five year period is plotted on the fifth year of each sequence.

0
20
40
60
80
100
120
140
1950
1952
1954
1956
1958
1960
1962
1964

acreage and yield, comparable to this trend in price variation. On the contrary, domestic production was stable over the 1957-59 period while price variation increased substantially and again was stable over the 1961-63 period which price variation fell drastically. These irregular price movements cannot be explained with reference to supply-affecting factors such as weather, disease, and yield nor do they appear related to shifts in consumer demand.

Table 10 provides a longer-run view of the farm price variation of fresh vegetables, returns and yields. The measures of variability were computed using data over the 1918-40 period, and the measures of variability are comparable among the crops since the variance is expressed as a percentage of the mean. It can be noted that the major crops — tomatoes, lettuce, cantaloupes and celery — which are also highly perishable crops relative to the others in Table 10 are characterized by the least yield variability. The crop differences in price and value per acre variability over this period reflect varying farm price elasticities. But even without knowledge of these it is clear from Table 10 that yield variations, which are the combined effect of intended and unintended changes in output, are no indication of price and income stability.

A change in the seasonal price movements of food products may influence total returns when the elasticity of demand varies by months. This in turn may influence annual prices where these are calculated from total returns. There is evidence that unlike a number of other food products the seasonal movements of fresh fruit and vegetable prices at least at retail level have not been smoothed out in recent times by improvements in transportation, cultivation, and marketing.

times by improvements in transportation, cultivation, and marketing. prices at least at retail level have not been smoothed out in recent food products the seasonal movements of fresh fruit and vegetable from total returns. There is evidence that unlike a number of other This in turn may influence annual prices where these are calculated influence total returns when the elasticity of demand varies by months.

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Table 10 provides a longer-run view of the farm price variation

appear related to shifts in consumer demand.

affecting factors such as weather, disease, and yield nor do they irregular price movements cannot be explained with reference to supply- while price variation increased substantially and again was stable over the 1931-63 period which price variation fell drastically. These the country, domestic production was stable over the 1927-59 period acreage and yield, comparable to this trend in price variation. On

Table 10. Annual Variability of Value per Acre, Yield and Farm Prices of Selected Fresh Vegetables, 1918-40.

Crop	Annual Variability[1]		
	Value Per Acre (increasing order)	Yield	Farm Price
	----------	percent	----------
Asparagus	11	7	10
Green peas	12	8	11
Snap beans	13	12	12
Tomatoes	15	7	13
Lettuce	17	8	13
Strawberries	18	14	16
Cantaloupes	19	8	16
Celery	19	5	18
Spinach	19	13	17
Cauliflour	20	8	19
Cucumbers	26	11	24
Watermelons	28	11	29
Cabbage	29	15	39
Onions	36	15	45
Irish potatoes	46	9	53

[1]Annual variability measured by the standard deviation of first differences, expressed as a percent of the long-term mean.

Source: U.S. Department of Agriculture, Bureau of Agricultural Economics data; in Kling, W., "Determination of Relative Risks Involved in Growing Truck Crops", Journal of Farm Economics, 24:695-98, 1942.

Table 10. Annual Variability of Yields per Acre, Wheat and Other Principal Crops of Upland Farms in Central Valley, 1917-1936.

Crop	Yields for Acre (Bushels or Tons)	Index	Coefficient of Variation
	Average		
	1917-1936		
	---------- Percent ----------		
Asparagus	11	7	10
Green peas	12	9	11
Snap beans	13	12	12
Tomatoes	14	7	13
Lettuce	15	8	18
Strawberries	18	11	16
Cantaloupes	19	8	15
Celery	19	5	14
Spinach	19	13	17
Cauliflower	20	6	19
Cucumbers	23	11	24
Watermelons	23	11	29
Cabbage	29	15	29
Onions	35	14	18
Irish potatoes	46	9	33

Unusual variability measured by the maximum deviation of items of Farmers, expressed as a percent of the ten-year mean.

Source: U.S. Department of Agriculture, Bureau of Agricultural Economics, Farm Income in Relation to Farming, Division of Intelligence Service, Mimeo., 1938.

Figure 3 compares the seasonal variation of fresh produce retail prices with that of the Department of Agriculture's market basket of all food products. The comparison indicates the price seasonality of the market basket changed over the 1947-65 years. There was no corresponding drift toward less price seasonality for the index of fresh fruit and vegetable prices. Assuming this retail seasonality is transmitted faithfully to the farm level, this would indicate a trend measure of within-year stability for fresh fruit and vegetable producers.

Seasonal farm price variations are closely related to retail variations, and the correlation is a product of the historical interaction of supply and demand characteristics. Because of supply seasonality, consumers over the years have adjusted their diets to production peaks and troughs. In addition retail pricing and promotion may alter seasonal demand in a manner which either accentuates or modulates these seasonal variations. The resulting seasonal price variations have not been segregated into those caused by changes in monthly output, those caused by retail pricing and promotion, and those reflecting independent consumer preferences. Nevertheless, the seasonal retail price variations of selected food products in Table 11 are of interest.

Indicating its frequent use in retail price promotions, the standard deviation of seasonal chicken prices is somewhat greater than that for fresh fruits and vegetables, but the range of seasonal prices for the latter far exceeds that of the former.[127]

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[127] Those familiar with excess capacity and intense price competition in the broiler industry will point out these retail price variations are stimulated by producers, and are not necessarily indicative of retail pricing discretion independent of supply conditions. Retail price specialing of chickens is discussed in: NCFM Technical Study No. 2, p. 52.

Figure 3 compares the seasonal variation of fresh produce versus prices with that of the department of a wholesale market for all food products. The comparison indicates the price sensitivity of the market had changed over the 1947-57 years. There was no comparability drift toward less price sensitivity for the items of fresh fruit and vegetable prices. Assuming this retail commodity is permitted fairly to the farm level, this would indicate a trend measure of within-year stability for fresh fruit and vegetable produce.

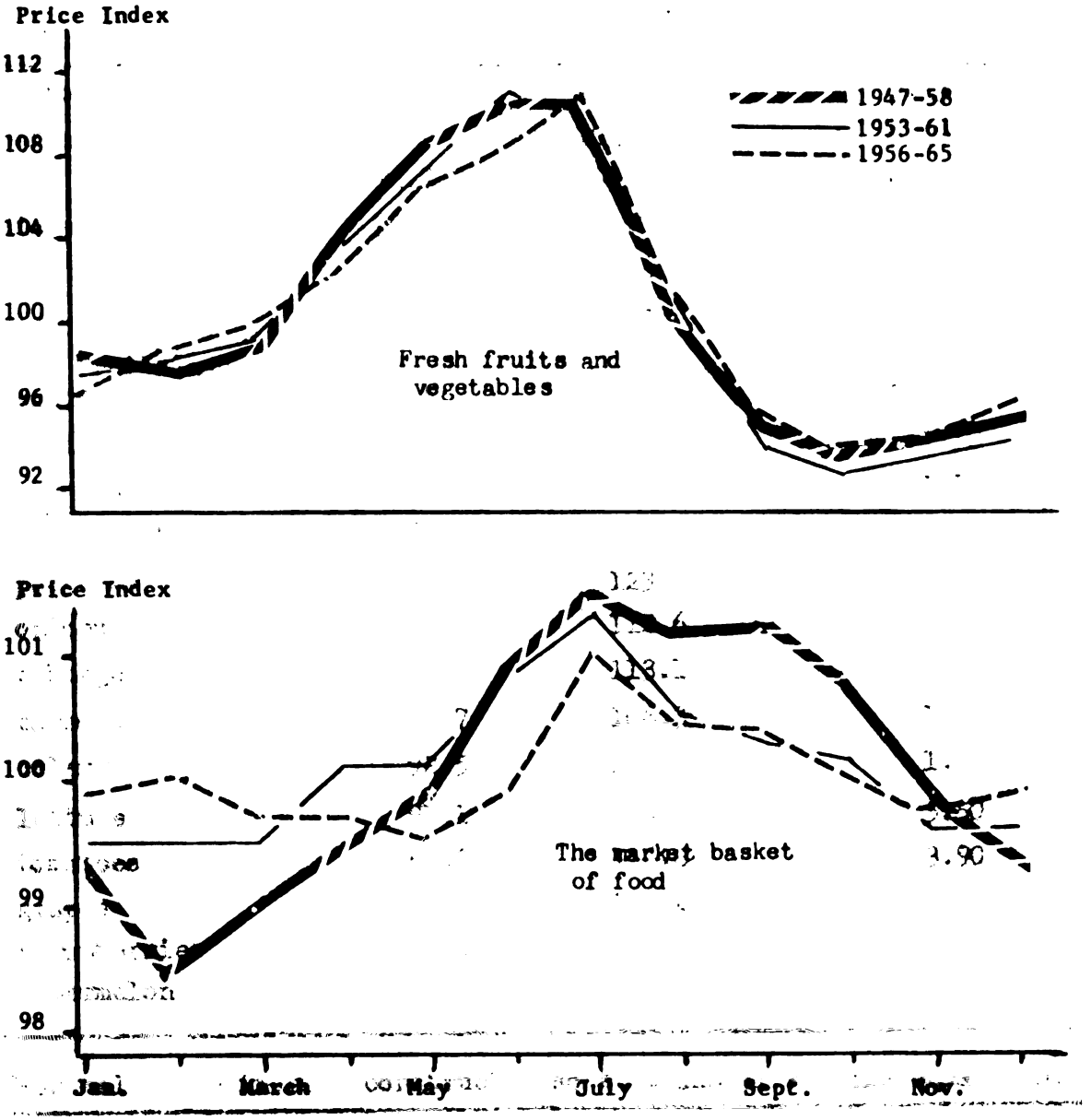
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Including the frequent use in retail price promotions, the standard deviation of seasonal chicken prices is somewhat greater than that for fresh fruits and vegetables, but the range of seasonal prices for the latter far exceeds that of the former.[27]

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[27]Those familiar with cheese commodity and turkeys price competition in the broiler industry will point out these retail price variations are stimulated by producers, and are not necessarily indicative of retail pricing discretion buyers set of supply conditions. Retail price speculating of chickens is discussed in: Will Technical Study No. 2, p. 32.

Figure 3. Trend In Seasonal Retail Price Variation, Fresh Fruits and Vegetables and All Foods, 1947-1965.



Source: Gale, H.F., Seasonal Variation In Farm Food Prices, U.S. Department of Agriculture, Miscellaneous Publication No. 840, Jan. 1961; Seasonal Factors, Consumer Price Index: Selected Series, June 1953-May 1961, U.S. Department of Labor, Bureau of Labor Statistics Bulletin No. 1366, May 1963; U.S. Department of Agriculture, Economic Research Service, ERS-311, Sept. 1966.

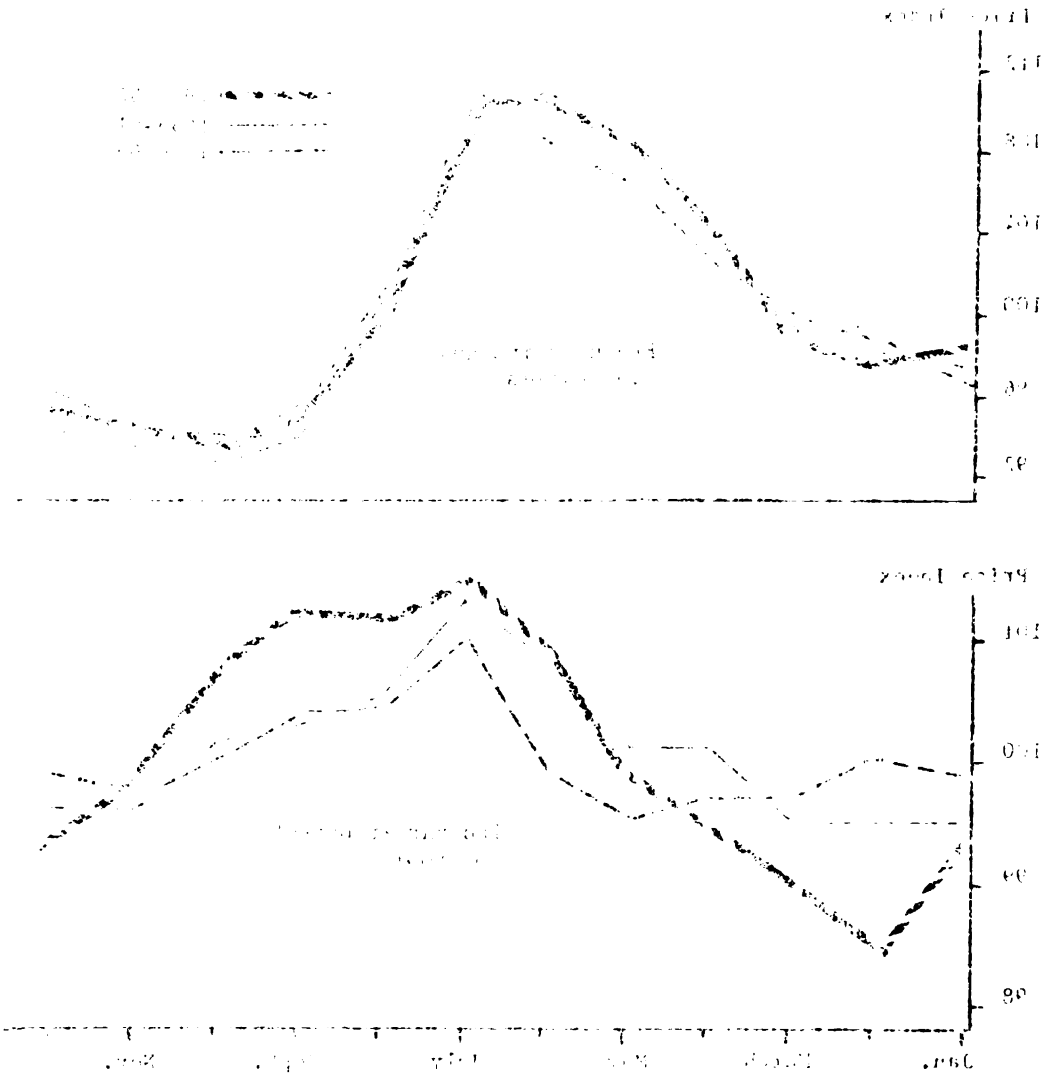


Table 11. Retail Price Variations of Selected Food Products, Seasonal Range and Standard Deviation, 1956-65

Item	Range of Seasonal Retail Price Variation[1]		Seasonal Standard Deviation
	low	high	
All food	99.6	101.0	0.15
Beef and veal	97.9	101.0	0.40
Pork	96.7	105.1	0.70
Chicken	98.3	101.3	1.00
Fish	99.5	100.6	0.10
Dairy products	99.0	100.7	0.10
Fresh fruits and vegetables	93.5	110.8	0.90
apples	79.8	129.5	1.10
oranges	91.9	109.3	1.70
grapefruit	86.9	117.0	2.30
potatoes	91.5	123.1	2.00
onions	91.4	112.6	2.40
cabbage	84.9	113.1	4.60
carrots	93.7	106.3	1.10
celery	92.5	110.7	1.80
lettuce	91.1	109.1	5.50
tomatoes	68.3	116.8	3.90
grapes	83.7	130.4	1.60
strawberries	88.1	113.2	0.80
watermelon	80.5	121.9	2.10

[1]Seasonal price indexes constructed so that annual average equals 100.

Source: National Food Situation, NFS-117, U.S. Department of Agriculture, Economic Research Service, Aug. 1966 and ERS-311, Sept. 1966.

Table 11. Retail Price Relatives of 5 Annual Food Products, Farmers' Share and Marketing Margin, 1913-44

Item	Index of Retail Prices (1935-39=100)		Farmers' Share of Retail Cost	Index of Marketing Margin
	Low	High		
All food	72.5	113.0	0.52	
Beef and veal	72.2	102.0	0.49	
Pork	76.7	109.1	0.40	
Mutton	72.3	113.2	1.00	
Milk	72.5	104.6	0.32	
Dairy products	72.0	108.7	0.32	
Fresh fruits and vegetables	72.5	110.6	0.30	
apples	72.6	109.6		1.10
oranges	72.9	106.3		1.40
grapefruit	62.2	117.0		2.30
potatoes	72.5	109.1		2.00
onions	72.4	118.6		2.40
cabbage	64.2	112.1		4.40
carrots	72.7	104.3		1.10
celery	72.6	110.7		1.40
lettuce	72.1	109.1		5.40
tomatoes	62.3	117.8		2.20
grapes	83.7	129.4		1.40
strawberries	60.1	111.2		0.40
watermelons	72.5	101.9		2.10

Seasonal price indexes corrected to that annual average by 12's.

Source: Monthly Food Price Index, BLS-BAE, U.S. Department of Agriculture, Washington, D.C., Mimeographed, Aug. 1945 and 1944-45, pp. 1-12, 1946.

The table also indicates that retail fruit prices are more variable than fresh vegetable prices. And it is notable that lettuce, cabbage and tomatoes are marked by extraordinary large retail price variations. A comparison of the retail price variabilities of the crops in Table 11 with the farm price variabilities of Table 10, remembering the former are monthly variations and the latter annual variations, suggests retail pricing and promotion policy accentuate seasonal prices more so for some crops than for others.

Table 12 shows the long-term trend in farm price stability of selected California fresh fruit and vegetable crops. In general the farm price variability of fresh vegetable crops increased over the time periods shown while the price variability of fresh fruit crops, with the exception of apples, declined. The farm price stability of apples and onions did not change over these time periods. It is also clear there was a difference in the change in price stability over the periods by seasonal groupings of crops. For the vegetable crops the increase in the standard deviation of farm prices was greatest for fall and spring crops.

Spatial Stability. Two organizational characteristics of fresh fruit and vegetable marketing channels discussed in Chapter 3 were the length of the channels and the centralization subtracted from the system by retail direct purchasing and bypassing of these wholesale markets. The suggestion was made that this shifted the locus of pricing from the centralized terminal market to the decentralized shipping point markets. Data from a 1958 study provide evidence of the implications of this major structural change for price stability. An index of

The table also indicates that prices may move more widely than farm variable prices. It is possible that changes and behaviors are masked by other (slowly changing) price variations. A comparison of the monthly price variability of the crops in Table 11 with the farm price variability of Table 13, mentioned the former are roughly verification of the latter general marketings, suggests that pricing and production policy decisions produce more so for some crops than for others.

Table 12 shows the long-term trend in farm price stability of selected California fresh fruit and vegetable crops. In general the farm price variability of fresh vegetable crops increased over the time periods shown while the price variability of fresh fruit crops, with the exception of apples, declined. The same price stability of apples and oranges did not change over these time periods. It is also clear there was a difference in the change in price stability over time periods by seasonal groupings of crops. For the vegetable crops the increase in the statewide production of farm produce was greatest for fall and spring crops.

Quality differentiation. The organoleptic characteristics of fresh fruit and vegetables are rarely clearly discernable to Grade 2 more than Grade 1 of the classes and the classification subtracted from the system by retail direct purchasing and processing of these products. The suggestion was made that this shifted the locus of pricing from the centralized terminal market to the decentralized shipping point markets. Data from a 1958 study provide evidence of the implications of this major structural change for price stability. An index of

Table 12. Annual Farm Price Variation of Selected California Fresh Fruits and Vegetables, by Seasonal Groups, 1918-57.

Crop[1]	Seasonal Group	Unit	Standard Deviation of Farm Prices[2]		
			1918-37	1938-57	1918-57
Vegetables					
Tomatoes	early fall	32# lug	.14	.30	.26**
	early summer		.27	.36	.29
	early spring		.22	.43	.34**
Lettuce	early fall	70# crate	.24	.81	.48**
	summer		.39	.65	.57
	winter		.35	.57	.49*
	early spring		.36	.75	.57**
Celery	winter	60# crate	.28	.52	.42*
	late fall		.23	.47	.36**
	spring		.33	.76	.58**
Carrots	early summer	75# crate	.24	.44	.38*
	winter		.35	.72	.63*
	late fall		.16	.78	.64**
Onions	late summer	50# crate	.32	.37	.39
	late spring		.44	.59	.58
Fruits					
Grapefruit		boxes	.35	.20	.26*
Navel oranges		boxes	.71	.37	.57**
Apples		bu.	.26	.29	.25

[1]Includes some crops sold for processing.

[2]Standard deviation computed by the variate difference method; see: Tintner, G., Econometrics, (New York: J. Wiley), 1952, pp. 312-14.

*Bartlett's test for difference in variance for two time periods significant at the .05 level.
**Bartlett's test significant at the .01 level.

Source: H.O. Carter; G.W. Dean, "Income, Price and Yield Variability for Principal California Crops and Cropping Systems" Hilgardia, 30: 175-218, Oct. 1960.

Table 12. Annual Instream Flow Studies Completed by Colorado Water Conservation Board Personnel as of December 31, 1979

Stream	Location	Length (miles)	Purpose	Status
Arkansas River	Granite to Salida	100	Fish habitat, recreation, water quality	Completed 1979
Arkansas River	Salida to Pueblo	80	Fish habitat, recreation, water quality	Completed 1979
Big Thompson River	Mouth of Canyon to Loveland	25	Fish habitat, recreation, water quality	Completed 1977
Blue River	Dillon to Green Mountain Reservoir	15	Fish habitat, recreation, water quality	Completed 1978
Cache la Poudre River	Mouth of Canyon to Greeley	45	Fish habitat, recreation, water quality	Completed 1977
Colorado River	Kremmling to Hot Sulphur Springs	20	Fish habitat, recreation, water quality	Completed 1978
Colorado River	Glenwood Springs to Rifle	25	Fish habitat, recreation, water quality	Completed 1978
Colorado River	Rifle to Parachute	20	Fish habitat, recreation, water quality	Completed 1978
Colorado River	Parachute to De Beque	20	Fish habitat, recreation, water quality	Completed 1978
Colorado River	De Beque to Palisade	30	Fish habitat, recreation, water quality	Completed 1978
Colorado River	Palisade to Fruita	25	Fish habitat, recreation, water quality	Completed 1978
Colorado River	Fruita to Utah State Line	20	Fish habitat, recreation, water quality	Completed 1978
Colorado River	Grand Lake to Granby Reservoir	15	Fish habitat, recreation, water quality	Completed 1978
Colorado River	Granby Reservoir to Kremmling	20	Fish habitat, recreation, water quality	Completed 1978
Colorado River	Hot Sulphur Springs to Parshall	20	Fish habitat, recreation, water quality	Completed 1978
Colorado River	Parshall to Mouth of Canyon	20	Fish habitat, recreation, water quality	Completed 1978
Colorado River	Mouth of Canyon to Dotsero	20	Fish habitat, recreation, water quality	Completed 1978
Colorado River	Dotsero to Glenwood Springs	20	Fish habitat, recreation, water quality	Completed 1978
Colorado River	Mouth of Canyon to Kremmling	20	Fish habitat, recreation, water quality	Completed 1978
Colorado River	Kremmling to Hot Sulphur Springs

price variability for five fresh vegetable crops and 16 wholesale terminal markets is given in Table 13.

Three characteristics of the fresh fruit and vegetable marketing channel affecting price stability are suggested by Table 13. The two markets where price variability is greatest, Boston and Philadelphia, are highly centralized terminal markets; the other markets are street or diffused markets. The more centralized the market, the greater proximity of buyers and sellers and the more sensitive the market to trading offers. The second observation is that price variability appears to increase with the distance of the market from the major shipping point markets of California and Texas; the eight most price-variable markets are located in the East. Most of the crops studied were produced primarily in the West, and the West coast markets displayed considerably more stability than the others studied. There is the suggestion in this that the complexity of the marketing channel and product perishability, as represented by the length of the marketing channel, are determinants of the degree of price stability.[128]

Another observation from Table 13 is that market stability shows a tendency to decline with the size of the wholesale terminal market. The order of listing of the markets in the table is the same obtained when the markets are ranked by size. In part this relationship is due to the distance of the Eastern markets from the major shipping point markets. Finally, Table 13 indicates there are variations in price stability of different crops in the same wholesale terminal markets.

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[128] The relationship is more complex than this; there are significant differences in the East and West wholesale terminal markets, two of which are the auction markets in the Eastern markets and the prevalence of large blocks of locally grown supplies in the West.

price variability for five fresh vegetable crops and 15 wholesale terminal markets is given in Table 13.

Three characteristics of the fresh fruit and vegetable terminal market affecting price stability are suggested by Table 13. The two markets where price variability is greatest, Boston and Philadelphia, are highly centralized terminal markets; the other markets are either decentralized markets. The more centralized the market, the greater possibility of buyers and sellers and the more speculative the markets to trading offers. The second observation is that price variability appears to increase with the distance of the market from the major shipping point markets of California and Texas; the chief fresh vegetable markets are located in the east. Most of the crops studied were produced primarily in the West, and the West coast markets displayed considerably more stability than the others studied. Third is the suggestion in this that the complexity of the marketing channel and product perishability, as represented by the length of the marketing channel, are determinants of the degree of price stability.[122]

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[122] The relationship is more complex than this; there are definitional differences in the cost and value variables here studied, two of which are the question marks in this research problem and the previous of Jarvis Hoods of locally grown supplies in the East.

Table 13. Index of Daily Price Variability for Selected Fresh Vegetables in 16 Wholesale Produce Markets, 1957-58.

Wholesale Market	California carrots	Texas carrots	Idaho potatoes	California lettuce	California celery	All crops
			index of price variability			
Boston	132	162	131	114	94	127
Philadelphia	126	154	94	110	100	117
Chicago	102	123	98	103	92	104
New York	100	100	100	100	100	100
New Orleans	-	94	113	88	84	95
Pittsburg	70	110	83	89	78	86
Detroit	90	110	57	83	77	83
Washington	88	88	73	80	78	81
Los Angeles	23	-	75	104	70	68
San Francisco	42	-	37	111	75	66
Atlanta	69	62	35	72	61	60
Seattle	33	-	44	78	66	55
Dallas	-	36	55	64	40	49
Denver	28	38	28	93	51	48
Minneapolis	31	-	20	66	33	38
Portland	8	-	15	47	24	23

[1]New York = 100. The index is computed on the basis of the percentage of market days on which price changed. Any change in the price quotation of the Federal Market News Service was considered a price change.

Source: Manchester, A.C., The Structure of Wholesale Produce Markets, US. Department of Agriculture, Economic Research Service, Agr. Econ. Rpt. No. 45, April 1964, p.96.

Table 17. [illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Lettuce prices in general were less stable in the wholesale markets than carrot and celery prices. With the exception of the Philadelphia wholesale market the price stability of California celery was greater in every market than the stability of the other crops.

Price Stability and the Marketing Margin. As a derived demand the farm price of fresh fruits and vegetables is sensitive to changes not only in retail prices but also changes in the marketing margin. Figure 4 illustrates the post-war trend in farm and retail prices of fresh produce, the marketing margin, and marketing costs and production. The marketing cost index was constructed of selected marketing costs unique to the marketing of fresh produce and heavily weighted by transportation costs. Although three ordinates appear in Figure 4, the vertical distances on each are comparable.

From 1947 to 1959 fresh fruit and vegetable marketing margins and costs moved roughly in unison. Since 1959 the rate of increase in the marketing margin has failed to keep pace with increases in costs.[129] The aggregate stability of fresh produce domestic output is also illustrated in the figure. In no year was the index of domestic production

[129]The earlier relation has not gone unnoticed and has prompted some conclusions which may need revising in light of the 1959-64 trends. One investigator suggested the relation was evidence that fresh produce marketing firms were practicing full-cost pricing, see: Manchester, A.C., "Prices, Costs and Marketing Margins for Fresh Fruits and Vegetables", Journal of Farm Economics, Aug.1962, p. 888. And Buse and Brandow found that the market basket farm-retail spread, highly correlated with the Bureau of Labor Statistics index of wholesale prices and reflecting major marketing costs such as wages and other prices of marketing inputs, was the most consistently related index to the marketing margin for fresh produce using annual data for the 1921-57 period: Buse, R.C., Brandow, G.E., "The Relationship of Volume, Prices and Costs to Marketing Margins for Farm Foods", Journal of Farm Economics, Vol.42, May 1960, pp. 362-70.

lecture prices in general were less stable in the wholesale markets than carrot and celery prices. With the exception of the Philadelphia wholesale mark-up the price stability of California celery was greater in every market than the stability of the other crops.

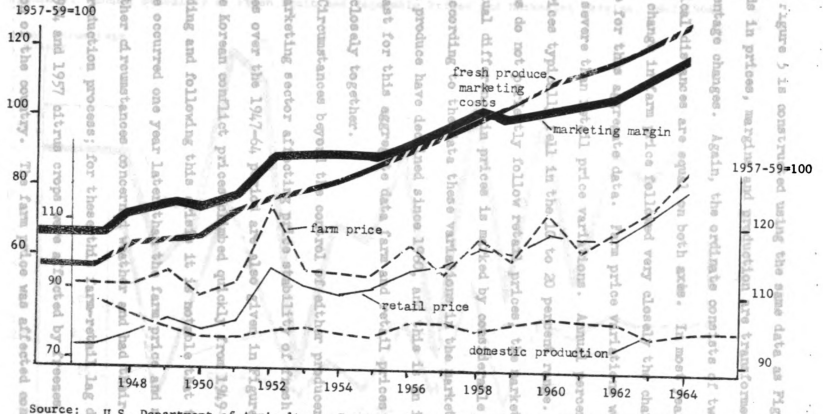
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[1] The earlier relation has not gone unnoticed and has provoked some conclusions which may prove revealing in light of the 1959-61 trends. One investigator explained the relation via a distance term. Fresh produce marketing firms were predicting full-cent prices, more: particularly, A.C., "Prices, Costs and Marketing Margs in Fresh Fruits and Vegetables", Journal of Farm Econ., August '59, p. 536. A more extensive study of the farmer's share of dollar receipt appears in: Bishop, Cecil E., "Farm Labor Problems", Journal of Farm Econ., Nov. '59, pp. 1161-1172. Index of wholesale prices and retailing margin costs which the Bureau of Labor Statistics as wages and other prices of marketing inputs, was the most statistically related index to the marketing margin for fresh produce and processed data for the 1947-57 period: Brandow, G.E., "Interrelations-ship of Weights, Prices and Costs to Marketing Margins for Farm Foods", Journal of Farm Econ., Nov. '59, pp. 1402-20.

Figure 4. Trends In Prices, the Marketing Margin and Marketing Costs, Fresh Fruits and Vegetables, 1947-1964.



Source: U.S. Department of Agriculture, Economic Research Service, The Marketing and Transportation Situation, quarterly; Cost Components of Farm-Retail Price Spreads For Foods, National Commission On Food Marketing, Technical Report No. 9, June 1966, p. 46; U.S. Department of Agriculture, Marketing Research Division, Farm-Retail Spreads For Food Products, Miscellaneous Publication No. 741, Nov. 1957, p. 122; U.S. Department of Agriculture, Economic Research Service, Farm-Retail Spreads For Food Products, ERS-226, April 1965, p. 27; U.S. Department of Agriculture, Economic Research Service, U.S. Food Consumption, Sources of Data and Trends, 1909-1963, and annual supplements, Statistical Bulletin No. 364, June 1965, pp. 123,136.

Figure 4. Trends in prices, farm marketings and marketing costs, 1950-1980, 1967-1969=100.

more than 5 percent above or below the 1957-59 average.

Figure 5 is constructed using the same data as Figure 4, but the trends in prices, margins and production are transformed to annual percentage changes. Again, the ordinate consists of two parts but vertical distances are equal on both axes. In most years the percentage change in farm price followed very closely the change in retail price for this aggregate data. Farm price variations were somewhat more severe than retail price variations. Annual percentage changes in prices typically fell in the 10 to 20 percent range. Because farm prices do not perfectly follow retail prices, the marketing margin or residual difference in prices is marked by considerable instability. But according to the data these variations in the marketing margin for fresh produce have declined since 1960, and this is an indication that at least for this aggregate data farm and retail prices are moving more closely together.

Circumstances beyond the control of either producers or firms in the marketing sector affecting price stability of fresh fruits and vegetables over the 1947-64 period are also given in Figure 5. Because of the Korean conflict prices climbed quickly from 1949 to 1951. Both preceding and following this crisis it is notable that the retail price change occurred one year later than the farm price and margin change. The other circumstances concerned weather and had their influence on the production process; for these this farm-retail lag did not appear. The 1954 and 1957 citrus crops were affected by freezes in the Southern portion of the country. The farm price was affected considerably more than the retail price for the first of these. But, due to perhaps the larger crop involved in the second freeze, farm and retail price

more than 5 percent above or below the 1957-59 average.

Figure 5 is constructed using the same data as figure 4, but the trends in prices, marketing and production are transformed to annual percentage changes. Again, the coordinate consists of two parts but vertical distances are equal on both axes. In most years the percentage change in farm price followed very closely the change in retail price for this aggregate data. Farm price variations were somewhat more severe than retail price variations. Annual percentage changes in prices typically fell in the 10 to 20 percent range. Because farm prices do not perfectly follow retail prices, the marketing margin or residual difference in prices is marked by considerable instability. But according to the data these variations in the marketing margin for fresh produce have declined since 1950, and this is an indication that at least for this aggregate data farm and retail prices are moving more closely together.

Circumstances beyond the control of either producers or firms in the marketing sector affecting price stability of fresh fruits and vegetables over the 1947-64 period are also given in Figure 5. Because of the Korean conflict prices climbed quickly from 1949 to 1951. Both preceding and following this crisis it is possible that the retail price change occurred one year later than the farm price and margin change. The other circumstances concerned weather and had their influence on the production process; for these this farm-retail lag did not appear. The 1954 and 1957 citrus crops were affected by freezes in the Southern portion of the country. The farm price was affected considerably more than the retail price for the first of these. But, due to perhaps the larger crop involved in the second freeze, farm and retail price

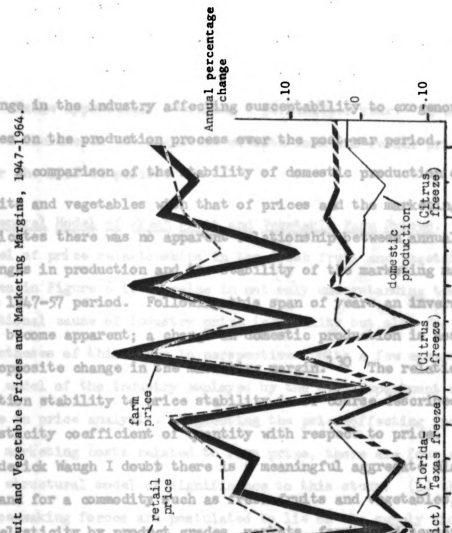


Figure 5. Annual Stability of Fresh Fruit and Vegetable Prices and Marketing Margins, 1947-1964.

Source: Figure 4.

stability were affected equally in that period. Finally, another Southern freeze in the 1961-62 season had only a negligible effect on farm and retail price stability. This is suggestive of a structural change in the industry affecting susceptability to exogenous influences on the production process over the post-war period.

A comparison of the stability of domestic production of fresh fruits and vegetables with that of prices and the marketing margin indicates there was no apparent relationship between annual percentage changes in production and the stability of the marketing margin over the 1947-57 period. Following this span of years an inverse relation has become apparent; a change in domestic production is associated with an opposite change in the marketing margin.[130] The relation of production stability to price stability is of course described by the elasticity coefficient of quantity with respect to price. Along with Frederick Waugh I doubt there is a meaningful aggregate elasticity of demand for a commodity such as fresh fruits and vegetables, so variable is elasticity by product grades, markets, forms, and seasons.[131] Nevertheless such elasticities are computed, and one estimate is that

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[130] It may not be coincidental that this relationship did not develop until 1957, approximately the time at which marketing costs began to rise more rapidly than the marketing margin. Only under this changed price-cost relation might the marketing sector have found it necessary to more carefully adjust marketing charges to growers in accordance with the size of the crop, higher costs being charged for the smaller crops in order to cover the fixed costs of marketing services. In this sense that a change in crop volume results in a change in the marketing costs per unit paid by the producer the elasticity of demand at farm level is affected.

[131] Waugh, F.V., Demand and Price Analysis, Some Examples from Agriculture, U.S. Department of Agriculture, Economic Research Service, Technical Bulletin No. 1316, Nov. 1964, p. 8.

Nevertheless such elasticities are computed, and one estimate is that elasticity by product grades, markets, form, and seasons.[12]

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the farm price elasticity of demand for fruits is -.82 and -.59 for fresh truck crops.[132] After the expansionary 1947-53 period in which domestic production rose consistently, the variability of output did not change appreciably averaging 2 percent per year. In contrast there was a decline in the magnitude of both farm and retail price variability over the 1956-64 period.

A General Model of Fresh Fruit and Vegetable Farm Prices. The general model of price relationships in the fresh fruit and vegetable industry given in Figure 6 is of value in not only understanding the more conventional cause of industry price instability but also for placing the hypotheses of this study in perspective. With a few exceptions this is the model of the industry employed by the U.S. Department of Agriculture in price analysis. Neglecting the price-affecting institutions and marketing costs related to farm price, there are four aspects of the structural model of significance to this study: (1) the principal price-making forces are postulated to lie on the supply side of the market; (2) the marketing system is apparently a passive agent in the pricing process; (3) the farm price is simply a derived demand for the retail price; and (4) the model does not generate hypotheses of the relationships between the marketing sector and the pricing process.

The simple model has repeatedly provided good statistical results for individual fresh fruit and vegetable crops. Its value can be shown for an aggregate market basket of fresh produce as well. Using aggregate

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[132] Fox, K.A., "Factors Affecting the Farm Income, Farm Prices and Food Consumption", Agricultural Economics Research, July 1951, pp. 65-86. These are estimates of shipping point (F.o.b.) elasticities of demand.

the farm price elasticity of demand for Imelda is -.43 and -.27 for fresh truck crops.[122] After the expansionary 1947-52 period in which domestic production rose considerably, the variability of output did not change appreciably averaging 2 percent per year. In contrast there was a decline in the magnitude of both farm and retail price variability over the 1956-64 period.

A General Model of Farm Fresh Fruit and Vegetable Demand. The general model of price relationships in the fresh fruit and vegetable industry given in Figure 6 is of value in not only systematizing the more conventional cause of industry price inflexibility but also for placing the hypotheses of this study in perspective. With a few exceptions this is the model of the industry employed by the U.S. Department of Agriculture in price analysis. Neglecting the price-affecting institutions and marketing costs related to farm price, there are four aspects of the structural model of significance to this study: (1) the principal price-making forces are postulated to lie on the supply side of the market; (2) the marketing system is commonly a passive agent in the pricing process; (3) the farm price is simply a derived demand for the retail price; and (4) the retail does not reverse hypotheses of the relationships between the marketing sector and the pricing process.

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[122]Fox, K.A., "Factors Affecting the Farm Income, Farm Prices and Food Consumption", Agricultural Economics Research, July 1953, pp. 65-86. These are estimates of slopping points (r.o.b.) elasticities of demand.

Figure 6. The Demand and Price Structure For Fresh Fruit and Vegetable Markets: General Model.

Heavy, double arrows indicate paths of major influence; medium arrows indicate paths of moderate influence. Dashed arrows indicate paths of doubtful, negligible or occassional influence.

supply-utilization data of the Department of Agriculture and the prices described in [illegible] an ordinary least squares multiple regression equation [illegible] computed. An additional variable, an index of fresh fruit and vegetable marketing costs, was included in the equation to represent a [illegible] measure of the marketing effort. The following equation was [illegible]

(1) $X_1 = 126.4 - 4.4X_2 + 0.4X_3 - 0.[illegible]X_4 + 0.[illegible]X_5 + 1.2X_6$
(2.7) (0.4) (0.[illegible]) (0.[illegible]) (0.5)

The standard deviations of the [illegible] regression coefficients are in parentheses; [illegible] the coefficients for the indexes of imports and exports were not significant at the 10 percent level. The coefficient of multiple determination [illegible]. The variables were in the form of annual index numbers, [illegible] the years in the 1956-64 period. 133

Variables were defined as follows:

X_1 index of fresh fruit and vegetable farm prices
X_2 index of fresh produce domestic production
X_3 index of fresh fruit and vegetable imports
X_4 index of fresh produce [illegible]
X_5 index of fresh fruit and vegetable exports
X_6 index of fresh fruit and vegetable per capita consumption
X_m index of fresh fruit and vegetable marketing costs

For variables, [illegible] production, beginning stocks, per capita consumption, and marketing costs, [illegible] 71 percent of the annual variance [illegible] fresh fruit and vegetable farm prices. Most of the signs on the [illegible] regression coefficients are as expected. The farm

motivation
risk
need for achievement
stress
anxiety
boredom
fear of failure
success
failure
ability
effort
luck
task difficulty
teacher expectation
past performance
affect
reward
punishment

supply-utilization data of the Department of Agriculture and the prices described in Figures 4 and 5 an ordinary least squares multiple regression equation was computed. An additional variable, an index of fresh fruit and vegetable marketing costs, was included in the equation to represent a gross measure of the marketing effort. The following equation was the result:

$$(1)\quad X_f = 126.4 - \underset{(2.1)}{4.1X_p} + \underset{(0.4)}{0.4X_I} - \underset{(0.3)}{0.5X_s} + \underset{(0.3)}{0.4X_e} + \underset{(1.1)}{2.3X_c} + \underset{(0.5)}{1.2X_m}$$

The standard deviations of the net regression coefficients are in parentheses; only the coefficients for the indexes of imports and exports were not significant at the 10 percent level. The coefficient of multiple determination was .71. The variables were in the form of annual index numbers, 1957-59 = 100 and included the years in the 1946-64 period.[133] Variables were defined as follows:

X_f = index of fresh fruit and vegetable farm prices
X_p = index of fresh produce domestic production
X_I = index of fresh fruit and vegetable imports
X_s = index of fresh produce stocks
X_e = index of fresh fruit and vegetable exports
X_c = index of fresh fruit and vegetable per capita consumption
X_m = index of fresh fruit and vegetable marketing costs

Four variables, domestic production, beginning stocks, per capita consumption, and marketing costs, accounted for 71 percent of the annual variance of fresh fruit and vegetable farm prices. Most of the signs on the net regression coefficients are as expected. The farm

[133]The data for this equation and the succeeding equation (2) along with the method by which the index of fresh fruit and vegetable marketing costs was constructed are contained in Appendix A.

supply-multiplication term of the Pasinetti or Ando multiplier and the price-induced substitution term of the Hicks multiplier. The latter is represented by Π_j where Δ and β are multiplied by Lerner expense multiple respectively. Additional variables, in light of Irwin and Yeager's marketing model, are included in the equation to represent a gross measure of the marketing effort. The following equation was the result:

$$(1)\quad X_j^1 = \underset{(2.1)}{1.4}\Delta - \underset{(0.1)}{1.1}X_j^2 + \underset{(0.1)}{0.1}\Pi_j - \underset{(0.2)}{0.2}\Pi_j^2 + \underset{(0.2)}{0.1}\Pi_j^3 + \underset{(1.1)}{2.3}\Pi_j^4 + \underset{(0.1)}{1.8}\Pi_j^5$$

The starred deviations of the net response coefficients are in parentheses; only the co-efficients for the increase of imports and exports were not significant at the 10% level I used. The coefficient of multiple determination was .72. The variables were in the form of annual index numbers, 1954-59 = 100 and included the years in the lag-ged period.[13] Variables were defined as follows:

X_j^1 = index of fresh fruit and vegetable farm prices
X_j^2 = index of fresh processed or storable production
X_I^1 = index of fresh fruit and vegetable imports
X_a^1 = index of fresh purchase stocks
X_j^3 = index of fresh fruit and vegetable exports
X_j^4 = index of fresh fruit and vegetable marketing costs
X_j^5 = index of fresh fruit and vegetable per capita consumption, and marketing costs, accounted for Π because of the annual variance of fresh fruit and vegetable farm prices. Most of the four variables, domestic production, beginning stocks, per capita consumption, and marketing costs, are as expected.

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[13]The data for this equation and the succeeding equation (2) along with the method by which the index of fresh fruit and vegetable marketing costs was constructed are contained in Appendix A.

price is inversely related to the size of the domestic crop and beginning stocks and directly related to per capita consumption. The positive relation of farm prices and marketing costs is in accord with the previous finding that the margin was inversely related to domestic production over the 1957-64 period.

The sign of the regression coefficient for marketing costs, however, was not entirely expected. This relation of marketing costs to farm prices indicates not only that the marketing sector — its enterprise combinations, functions, and policies affecting marketing costs — is more than a passive agent in the farm price process but also indicates something of the changes in marketing functions occurring in shipping point markets.[134] For, if the increased marketing costs are a result of the substitution of marketing services for household services and, as the evidence indicates, consumer demand for these marketing services is income-elastic, then the marketing services could so shift demand that the farm price would be unaffected. On the other hand, if the increased marketing costs are due to product-saving services such as prepackaging, the farm price might be expected to increase with marketing costs. Finally, if the marketing system assumed services previously performed by producers, the increased marketing costs might be expected to decrease farm prices.[135] The observed relationship

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[134] Three possible relations between farm prices and marketing costs were suggested by Kenneth Ogren in: "Marketing Costs, Farm Prices and the Farmers' Share", Policy for Commercial Agriculture, Joint Economic Committee of the Congress, 1957, p. 256.

[135] A fourth possible reason for the relation is concerned with the ability of the shipping point marketing firm to pass increased marketing costs forward to buyers or backward to producers.

price is inversely related to the size of the production unit [illegible] ing stocks and directly related to per capita consumption. The [illegible] ty's function of farm prices and marketing costs is in general with the previous finding that the margin was inversely related to [illegible] production over the [illegible]-ed period.

The sign of the regression coefficient for marketing costs, however, was not entirely expected. This relation of marketing costs to farm prices indicates that the marketing sector — its customers, practices and conditions, functions, and policies affecting marketing costs — is more than a passive agent in the farm price process and also influences materially of the changes in marketing functions occurring in cases and, as the evidence indicates, contributes toward for these slipping point reasons.[124] For, if the increases in marketing costs are a result of the substitution of marketing services for [illegible] purchased services is known-liable, then the marketing services could so alter [illegible] that the farm price no [illegible]. On the other hand, if the increased marketing costs are due to product-saving services such as [illegible], the farm price might be expected to increase with marketing costs. Finally, if the marketing system secures services preferred by producers, the increased marketing costs might be expected to decrease farm prices.[125] The observed relationship

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[124]These possible relations between farm prices and marketing costs were suggested by Kenneth [illegible] in his "Marketing Costs, Farm Prices and the Consumer Dollar," Philip [illegible] Agricultural Marketing, Food Research Institute of the University, 1951, p. 2-5.

[125]A fourth possible reason for the relation is concerned with the ability of the slipping point for during time to pass increased marketing costs for fuel to buyers or handlers to producers.

between prices and marketing costs is a combination of these effects. But the financing arrangements and contracts providing for the shipping point firm to furnish a number of production items indicate the product saving services must be substantial to offset the transfer of production functions to shipping point marketing firms.

Equation (1) was computed by successively eliminating less significant variates from a larger model containing more of the structural characteristics of Figure 6. The order of deletion of these variables is of some interest in appraising the importance of the relationships postulated in that figure. In addition to those variables in Equation (1) this larger model consisted of an index of the number of marketing orders and agreements in effect for fresh fruits and vegetables throughout the country, an example of a price-affecting institution, and an annual index of unharvested production of fresh produce.[136] The latter is an estimate of crop abandonment of fresh fruits and vegetables by producers for economic reasons such as harvest costs exceeding returns. The institutional variable was deleted by the ordinary least squares step-wise deletion routine first, the economic abandonment variable second. The variables representing imports and exports were eliminated next, followed by the index of domestic beginning stocks. The sixth and seventh variables to be eliminated were domestic production and consumption, respectively. The index of marketing costs, typically omitted in the study of factors affecting farm prices, was the last

[136] Data for constructing the index of marketing orders and agreements was taken from Federal and State Enabling Legislation for Fruit and Vegetable Market Orders: Evolution and Current Status, National Commission on Food Marketing, Technical Study No. 4, Supplement No. 1. The index of crop abandonment was constructed from data in Agricultural Statistics, U.S. Department of Agriculture, Statistical Reporting Service, Annual. Crop abandonment data is available only for fresh vegetable crops.

between prices and marketing costs is a redistribution of income.

But the financing arrangements will not seem profitable for the shipping point firm to furnish a number of production items in order to provide saving services which would be substantial to offset the temptation of production functions to slighting point marketing there.

Equation (1) was constructed by successively eliminating less significant variables from a large total combination more of the structural characteristics of figure 4. The order of deletion of these variables is of some interest in any relating the importance of the relationships pourtrayed in that figure. In order to be conservative in (1) this large model consisted of an index of the number of marketing outlets and expense to be allocated for transit in and vertically diversified out the country, an example of a primary factor distribution, and an annual index of weather-caused production of farm products.[139] The latter is an estimate of crop planting and of the soil fertile and vegetables by problems for erratic seasons such as last early causing returns. The institutional variable was defined by the ordinary least squares step-wise deletion routine first, the economic development variable second. The variables representing imports and exports were eliminated, followed by the index of domestic buying stocks. The climatic and several variables to be studied were uncertain production and consumption, respectively. The index of marketing costs, typically omitted in the study of factors affecting farm prices, was the last

[139] Data for constructing this index of terminal carlot sales and expenses was taken from Annual and Final Marketing Statistics, Fruit, Vegetable Division, Agricultural Marketing Service, U.S. Department of Agriculture, Washington, D.C. Adjustments for deletions, annual. Crop abandonment data is available only for truck vegetable crops.

variable to be deleted in the iteration process.

In general the model confirmed the priority given price-making forces in the model of the fresh fruit and vegetable industry, however. Production and consumption are major forces; imports, exports and economic abandonment are less important. The lack of significance for the institutional variable is not serious since it is a gross measure and market orders are multiple purpose institutions. But the general confirmation of the model in no way detracts from the value of the equation in showing that the market sector at least in a broad way is more than passive in the system of prices. If the index of marketing costs is eliminated from Equation (1) the coefficient of multiple determination falls from .71 to .52.

While the variable representing economic crop abandonment was not significantly related to farm price in Equation (1), it is impossible to explain such behavior without reference to price-cost relations. Crop abandonment is the producer's alternative to crop marketing, is in this sense a price-affecting institution, and whether caused by prices so low as to exceed harvest costs or producer attempts to restrict marketings and increase farm prices is in either case related to prices. That this is true is shown in Figure 7. Over the 1947-64 period declining farm prices were consistently associated with increased crop abandonment. The farm price stability in Figure 7 differs from that in Figure 5 since the former is computed using only fresh vegetable crop data.

A useful distinction can be made between that economic abandonment of crops undertaken for the purpose of raising farm prices and that resulting from low prices. The former might be expected to exert a

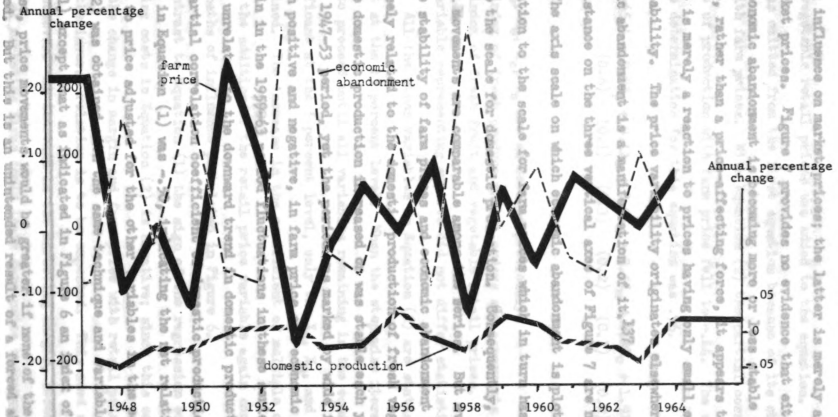
variable to be defined in the following section.

In general the level of the producer's price is determining forces in the model of the firm. In the short and long run, investment and consumption are major determinants, respectively, of economic activity and are functions of the level of production and the institutional variables in the model. Changes in the price and market orders are multiple proximate influences on the conditions of the model in no way changes the value of the equation in showing that the market mechanism is more than passive in the process of pricing. If the function of the costs is differentiated from equation (2) the coefficient of marginal determination will be (2).

While it is useful to represent economic processes as [illegible] to derive equation (2), it is typical to explain such behavior which is reflected in the following. Crop planning is the producer's alternative to crop marketing. In this sense a purchase-planting decision, and its time sequence by phase so for as to reveal [illegible] or producer strategies to market marketing and increase [illegible] in either case related to phase. That this is true is clear in [illegible]. Over the [illegible] period declining farm prices were accompanied with increased crop plantings. The figure relationship in figure 7 differs from that in figure 6 since the former is concerned with only food vegetable crop farms.

A useful distinction can be made on this score to distinguish of crops maintained for the purpose of raising farm values and those resulting from low prices. The former might be explained to accord a

Figure 7. Fresh Vegetable Farm Price Stability, Economic Crop Abandonment and Domestic Production, 1946-1964.



Source: U.S. Department of Agriculture, Statistical Reporting Service, Agricultural Statistics, annual. Data is for 28 major fresh vegetable crops.

stabilizing influence on market prices; the latter is merely a reaction to market prices. Figure 7 provides no evidence that either farm price or economic abandonment is becoming more or less stable in time. As a result, rather than a price-affecting force, it appears that crop abandonment is merely a reaction to prices having only small effect on their stability. The price variability originates elsewhere and the economic abandonment is a manifestation of it.[137]

The distance on the three vertical axes of Figure 7 are not comparable. The axis scale on which economic abandonment is plotted has a 10:1 relation to the scale for farm prices which in turn has a 2:1 relation to the scale for domestic production. Consequently, only directional movements are comparable among the series. But even these suggest the stability of farm prices and economic abandonment are not always closely related to the domestic production of fresh vegetables. For example domestic production increased or was stable each year during the 1947-53 period, yet the period was marked by wide fluctuations, both positive and negative, in farm price and economic abandonment. Again in the 1959-63 period fluctuations in these series were apparently unrelated to the downward trend in domestic production.

The partial correlation coefficient of domestic production and farm price in Equation (1) was -.50, indicating the net relation of production to price adjusted for the other variables in the equation. Equation (2) was obtained with the same technique and variables as Equation (1) except that as indicated in Figure 6 an index of fresh

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[137] Of course, price movements would be greater if none of the crop was abandoned. But this is an unintended result of a forced abandonment decision and differs from a purposeful decision to abandon and influence stability of prices.

Equation (1) except that as indicated in Figure 6 an index of farm price in Equation (1) was -.50, indicating the net relation of production to price adjusted for the other variables in the equation. Equation (2) was obtained with the same technique and variables as apparently unrelated to the downward trend in domestic production.

The partial correlation coefficient of domestic production and farm price, both positive and negative, in farm price and economic alarm- ment. Again in the 1919-43 period fluctuations in these series were during the 1947-53 period, yet the period was marked by wide fluctua- for example domestic production increased or was stable each year always closely related to the domestic production of fresh vegetables. suggest the stability of farm prices and economic abandonment are not directional movements are comparable among the series. But even these

parable. The axis scale on which economic abandonment is plotted has a 10:1 relation to the scale for farm prices which in turn has a 2:1 relation to the scale for domestic production. Consequently, only

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[137] Of course, price movements would be greater if none of the crop was abandoned. But this is an unintended result of a forced abandon- ment decision and differs from a purposeful decision to abandon and influence stability of prices.

fruit and vegetable retail prices was added to the equation. This variable was omitted from the first equation because of its obvious relation with farm prices. With Equation (2) the partial correlation coefficient of production with farm price fell to -.44. The coefficient of multiple determination for this equation was .96.

$$(2)\quad X_f = -65.4 - \underset{(0.6)}{0.9X_p} + \underset{(0.1)}{0.1X_o} + \underset{(0.3)}{0.8X_c} - \underset{(0.2)}{0.5X_m} + \underset{(0.1)}{0.2X_o} + \underset{(0.2)}{1.9X_r}$$

Where,

X_f, X_p, X_o, X_c, X_m are as defined previously
X_o = index of fresh produce market orders and agreements in effect
X_r = index of fresh fruit and vegetable retail prices.

The variable representing exports did not differ statistically from zero. All the other variables in Equation (2) are statistically significant at the 13 percent level. When the step-wise iteration was permitted to proceed until all variables remaining in the equation were significant at the 5 percent level, only the X_o, X_m, and X_r variables remained. The increase in the coefficient of multiple determination with the addition of the retail price variable again confirms the major paths of influence postulated in Figure 6.

In contrast to Equation (1) the sign of the regression coefficient for marketing costs in Equation (2) is negative; since this coefficient indicates the change in margin and farm price with retail price held constant, the inverse relation is to be expected. This need not be the case, however. An increase in the marketing margin, absorbed by the profit of marketing firms could leave farm price unchanged. The sign, however, is consistent with a marketing system which passes

fruit and vegetable retail prices was carried to the equation. This variable was omitted from the final equation, because of its overlap relation with farm prices. When Equation (2) the residual correlation coefficient of production with farm price fell to -.14. The coefficients of multiple determination for this equation was .72.

$$(2)\quad X_p = -7.4 - 0.2X_p + 0.1I_e + 0.2P_e - 0.4M_a + 0.2P_o + 1.2P_p$$
$$(0.4)\quad (0.2)\quad (0.2)\quad (0.2)\quad (0.2)\quad (0.1)\quad (0.2)$$

Where,

X_f, X_p, X_e, X_c, X_m are as defined previously
X_o = Index of fresh produce market orders and export sales in a fiscal
X_f = Index of fresh fruit and vegetable retail prices.

The variable representing exports did not differ statistically from zero. All the other variables in Equation (2) are statistically significant at the 95 percent level. When the above equation was permitted to proceed until all variables remaining in the equation were significant at the 5 percent level, only the X_e, X_p, and X_p variables remained. The increase in the coefficient of multiple determination with the addition of the retail price variable again confirms the major paths of influence postulated in Figure 4.

In contrast to Equation (2) the sign of the regression coefficient for marketing costs in Equation (2) is negative; since this coefficient indicates the change in margin and farm price with retail price held constant, the inverse relation is to be expected. This need not be the case, however. An increase in the marketing margin, absorbed by the profit of marketing firms could leave farm price unchanged. The sign, however, is consistent with a marketing system which passes

marketing costs backward to producers instead of forward to consumers. Using 1930-51 data Suits found, similarly, that increases in rail freight rates, which account for some 77 percent of the total marketing bill, were associated with reductions in the net farm price of watermelons by about the same amount.[138] The institutional basis for such a treatment of costs is discussed in Chapter 5.

In summary farm price stability is a relatively greater problem in the fresh fruit and vegetable industry than for other food products. Although the level of fresh fruit and vegetable prices has risen in accordance with long-term secular increases in all food prices, the variation has been considerably greater. Relative to these other food products the component of these variations subject to seasonal regularity is less for fresh produce, and the unpredictable, irregular movements are more important. In these characteristics of fresh fruit and vegetable farm prices lies the problem of the failure of prices to coordinate market supplies with demand and rationalize the allocation of resources in production. The requisite stability and predictability for market coordination are lacking, and widespread crop abandonment is one manifestation of the resulting poor market coordination.

Aggregate time series data cannot be conclusive but there is evidence suggesting at the least that not all these price variations can be attributed to changes in output occasioned by yield and acreage changes. Marketing costs, representing the complex of marketing effort, make a significant contribution to the explanation of variations in farm prices of fresh fruits and vegetables: output alone does

[138] Suits, D.B., "An Econometric Model of the Watermelon Market", Journal of Farm Economics, 37:242, May 1955.

marketing costs balanced to producers instead of forward to consumers.
Using 1920-51 data Suits found, similarly, that increases in rail freight rates, which account for some 77 percent of the total marketing bill, were associated with reductions in the net farm price of vegetables by about the same amount.[38] The institutional basis for such a treatment of costs is discussed in Chapter 5.

In summary farm price stability is a relatively greater problem in the fresh fruit and vegetable industry than for other food products. Although the level of fresh fruit and vegetable prices has risen in accordance with long-term secular increases in all food prices, the variation has been considerably greater. Relative to these other food products the components of these variations subject to seasonal regularity is less for fresh produce, and the unpredictable, irregular movements are more important. In these characteristics of fresh fruit and vegetable farm prices lies the problem of the failure of prices to coordinate market supplies with demand and rationalize the allocation of resources in production. The resultant stability and predictability for market coordination are lacking, and widespread crop abandonment is one manifestation of the resulting poor market coordination.

Aggregate time series data cannot be conclusive but there is evidence suggesting at the least that not all these price variations can be attributed to changes in output occasioned by yield and acreage changes. Marketing costs, representing the complex of marketing effort, make a significant contribution to the explanation of variations in farm prices of fresh fruits and vegetables relative to other food products.

[38] Suits, D.B., "An Econometric Model of the Watermelon Market", Journal of Farm Economics, 37:249, May 1955.

not explain all these variations by any means.

The problem remains to determine the characteristics of the marketing sector related to farm price stability. The centralization of the wholesale terminal markets, the number of market orders and agreements, the levels and incidence of marketing costs, and enterprise combination between shippers and producers have been discussed briefly. Many of the institutional characteristics of the marketing channel cannot be represented by data such as was done in this chapter. For this reason the following chapter is devoted to a qualitative appraisal of the implications of these institutions for farm price stability. In a later chapter we will return to the measurement of market trends and effects of market institutions using somewhat less aggregated data than was used here.

not explain all these variations by any means.

The problem remains to determine the characteristics of the marketing sector related to farm price stability. The continuum of the wholesale terminal markets, the notion of marked orders and agreements, the level and incidence of marketing costs, and enterprise coordination between shippers and producers have been discussed briefly. Many of the institutional characteristics of the marketing channel cannot be represented by data such as was done in this chapter. For this reason the following chapter is devoted to a qualitative appraisal of the implications of these institutions for farm price stability. In a later chapter we will return to the measurement of marked trends and effects of market institutions using somewhat less aggregated data than was used here.

Chapter 5.

VERTICAL COORDINATION AND FARM PRICE INSTABILITY IN THE FRESH FRUIT AND VEGETABLE INDUSTRY

In this chapter the evidence for the linking of farm price instability with the marketing structure and behavior is developed for the most part using economic evidence gathered through the hearing process by the National Commission on Food Marketing.[139] These hearings are a fertile source of economic data qualitatively different from that presented in Chapter 4 and that to be presented in Chapter 6. Among the many frameworks serving to guide the taking of testimony at these hearings, and they are guided from the selection of the city to the selection of witnesses to the pre-interviews with witnesses, was one framework dealing with hypothesized relations of the interaction of the marketing and production sector for fresh fruits and vegetables. These hypotheses were drawn from previous studies of the industry, previous hearings such as those by the Small Business Committee of the House of Representatives, from staff studies of the industry and its problems, and as the hearing process progressed, from previous hearings.

Within this framework of the interaction of the production and marketing sectors there were a group of hypotheses relating to the effect of the marketing sector's structure and conduct on producer prices. Dual problems of price levels and stability were recognized

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[139] There were three public hearings relating to the fruit and vegetable industry held by the Commission, one in McAllen, Texas on June 11 and 12, 1965, another in San Francisco on July 8-10, 1965, and another in Seattle, Washington on Sept. 17-18, 1965. While these areas represent a large portion of the total supplies of fresh fruits and vegetables it is unfortunate one more hearing could not have been held dealing with the Florida fresh fruit and vegetable industry.

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from the beginning, but often in practice the two became intertwined by witnesses as well as the staff. One purpose of this chapter is to reestablish the duality originally sought. But it would be misleading to say this can be done at this time wholly satisfactorily. Because of the interrelations between the problems of price levels and stability it was exceedingly difficult for staff as well as witnesses to maintain sharp lines between the two problems.

The Sources of Price Instability. The hearings do not provide an unequivocal estimate of the relative importance of supply and demand for market stability or instability. One recognized problem in this respect derives from the length and complexity of the marketing channel. For the most part witnesses at the hearings consisted of fresh fruit and vegetable producers and shipping point firms. Producers, far removed from the wholesale terminal markets and retail markets, are not in the best position for appraising the performance of the industry nor for observing the implications of the entire marketing channel for producer and consumer welfare. Their perception of economic relations in the industry cannot be ignored both because of their influence on the political process and because when they are not engaging in polemics and employing the marketing sector for an economic scapegoat they are in a unique position to appraise industry relations. But it is difficult to separate these dimensions of their testimony, and a knowledge of the witness along with the examining process are of some aid.

In addition to their position in the industry marketing channel, the witnesses' observations relating to marketing and production interaction are frequently complicated by the integrated structures between

action are frequently complicated by the interposed structures between witnesses' observations relating to marketing and production interests of the witnesses along with the examining process are of two kinds.

In addition to their position in the industry marketing channel, and employing the marketing sector for an economic sector that they are in a unique position to express industry relations. But it is difficult to segregate these dimensions of their testimony, and a knowledge from the beginning, but often in practice the two become intertwined by witnesses as well as the staff. The purpose of this chapter is to reestablish the dual or primary roles. But it would be intellectually to say this can be done at this time clearly satisfactorily. Because of the interconnections between the problems of price levels and elasticity it was economically difficult for staff as well as witnesses to maintain sharp lines between the two roles.

The Concept of Price Elasticity. The hearings do not provide an analytical estimate of the relative importance of supply and demand for market elasticity or inelasticity. The conceptual problem in this respect derives from the length and complexity of the marketing channel. For the most part witnesses at the hearing's concerned of fresh fruit and vegetable producers and shipping point firms. Producers, for removed from the wholesale terminal markets and retail markets, are not in the best position for appreciating the performance of the industry nor for observing the duplications of the entire marketing channel for producer and consumer welfare. Their perception of economic relations in the industry cannot be ignored both because of their influence on the political process and because when they are not erroneous in judging

the two sectors as well as the incomplete exchange arrangements between the sectors described in Chapter 3. Producers do not draw distinct lines between the supply and demand factors affecting their prices. They recognize the simultaneous interaction of supply and demand factors and the fact that most parties in the market influence both. In this, they are more realistic than those who try to draw such lines for conceptually distinguishing between the two sets of factors. Finally and not surprisingly, witnesses were inclined to attach major importance to the marketing sector as the source of their problems merely because they were testifying to a national commission of food marketing.[140]

Fresh fruit and vegetable producers have a sense of the elasticity of demand they face in the marketing sector. They are aware that small changes in market supplies cause large price changes, but they differ on the contribution of the marketing sector to elasticity. Some presented the traditional view that the instability is a product of

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[140] This attitude on the part of both staff and witnesses that a marketing commission must and can be solely interested in the problems of marketing and to a lesser extent in the problems of production, while justified by the scope of marketing problems alone and that a National Commission on Food and Fiber would be investigating production problems in the near future, undoubtedly biased the hearing evidence. The same problem arose in personal interviews. Nevertheless where genuine efforts were made to permit witnesses to identify sources of price and income problems, regardless of their nature, much the same result was obtained. Perhaps this is a product of the industry's exposure to 20 years of research justification under the Agricultural Research and Marketing Act or to interest groups' exploitation of the marketing process as a source of producer problems. It must be emphasized the hearing as economic evidence is a selective tool. Its goal is to highlight selected problems and gain qualitative evidence in the form of perceived market relations and experiences. In this, misrepresentation, poor judgement and nonsense is not to be tolerated. But no one ever participating in the hearing process would argue representativeness is the goal.

the two sectors as well as the incomplete exchange relationships between the sectors described in Chapter 3. Producers do not know elasticities between the supply and demand factors affecting their prices. They recognize the simultaneous interaction of supply and demand forces and the fact that most products in the market influence one another. In this, they are more realistic than those who try to draw such lines for conceptually distinguishing between the two sets of factors. Finally and not surprisingly, witnesses were inclined to attach major importance to the marketing sector as the source of their problems merely because they were together to a profound examination of food marketing.[140]

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[140]This attitude on the part of both chain and witnesses that a marketing commission must and can be solely interested in the problems of producing and to a lesser extent in the problems of processing, while justified by the scope of marketing problems alone and that a National Commission on food and fiber would be biased toward producer evidence. The same point can be presented in reverse. Economic-less where genuine efforts were made to permit witnesses to identify sources of price and income problems, recognition of their merits, much the same result was obtained. Perhaps this is a product of the industry's experience to 30 years of regulation under the Agricultural research and Marketing Act or to increased progressive-ness of the marketing process as a source of purchase products. It must be emphasized the hearing as economic evidence is a selective tool. The goal is to get the selected problems and main qualitative evidence in the form of presented studied reports and experiences. In this, misrepresentation, poor judgment and ignorance is not to be tolerated. But no one ever predicted during the hearing process would argue representativeness is the goal.

demand elasticity and the failure of output to adjust to changes in prices:

Mr. Marshall: When we say, for example, that onions have been planted and grown and know about what the supply is, that supply could be about the amount that the consuming public would consume, what percentage would you have to withold from the market to affect price?

Mr. Brand: If you get down to a balance between supply and demand, 10 percent one way or another is enough to cause feast or famine in fresh produce.[141]

More often the contribution of the marketing sector is in some way attached to or postulated to affect in some way the supply response mentioned by Mr. Brand. This line of reasoning generally posits the source of the fluctuation along the inelastic demand curve with the buyer or the seller. For example one witness stated:

> "It is a situation where he who has the upper hand surely uses the whip. If the buyer finds there are one or two cars too many of several of our commodities, lettuce, cantaloupes, and some of the more perishable items, he will push that price down and the seller, in the terms of the trade, runs pretty fast. On the other hand, if the seller, the shipper or grower-shipper, finds that there is a little greater demand than there is supply, they switch positions pretty rapidly."[142]

This appraisal of price stability and the interaction of the marketing sector with supply is heard all too often to ignore. It derives from market experiences where a very small change in product offering determines what is known as a buyer's or seller's market. With respect to price levels the hypothesis of a buyers' or sellers' market is concerned with the general trend of prices. But the buyer-seller market hypothesis of price changes is that short-run movements in demand or supplies may temporarily favor inventory positions or purchase sales

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[141] McAllen Hearings, p. 550.

[142] San Francisco Hearings, p. 106.

demand elasticity and the failure of out to adjust to changes in

price:

Mr. Marshall: ...can we say, for example, that entries into these physical and commercial lines are brought to equality in, that are by could be said that the common fear would [illegible] from the market to safety [illegible]

Mr. Brent: If you get down to a labor person to only and demand, it [illegible] one way or another is over it to serve trade or [illegible] Fresh produce.[14]

More often the distribution of the resulting surplus is in some way allocated to or [illegible] to affect in one way the supply response mentioned by Mr. Brent. This line of reasoning generally posits the source of the fluctuation along the [illegible] demand curve with the buyer or the seller. For example one witness stated:

> "It is a situation where in who has the upper hand mostly uses the whip. If the buyer thinks there are one or two cars too many of peanuts of our commodities, [illegible], or [illegible], and some of the more particular items, he will push that price down and the seller, in the face of the trade, runs pretty fast. On the other hand, if the seller, the elevator or [illegible], finds that there is a little weather damage than there is supply, they exhaust on [illegible] pretty rapidly."[15]

This appraisal of price elasticity and the importance of the marketing sector with supply is heard all too often to ignore. It derives from market experiences where a very small change in product quantity determines what is known as a buyer's or seller's market. Such reasoned to price levels the hypothesis of a buyers' or sellers' market is concerned with the general trend of prices. Put the buyer-seller mar- or supplies may temporarily favor [illegible] positions or market [illegible]

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[14] San Francisco Hearings, p. 106.

[15] Allocation Hearings, p. 110.

commitments of buyers and sellers. In addition, in the fresh produce industry a buyers' market is associated with a temporary price below or at cost of production, but not cost of harvest and marketing. In all cases the hypothesis is concerned with the beneficiary of the price change, the buyer or the seller.

A variant of the buyer-seller market hypothesis is that market fluctuations are caused by the influence of the marginal or slightly oversupplied seller. The weak seller is the seller who can effectively lower prices for all sellers and does so by offering his crops at below the prevailing market price. There is immediate price followership in shipping point markets selling undifferentiated products and the lower price is effective until the weak seller's excess supply precipitating the decline is relieved at which time a new and higher price is established. A number of such situations occurring repeatedly would produce a highly unstable market.

Three things are necessary for the weak seller to have economic meaning. The first is that, distributed among all the sellers, the excess supplies of the weak seller would not have as much effect on the price structure. This seems reasonable. Secondly there must be a reason for the misallocation of supplies among the sellers, thus producing the weak seller. The contracts and financing arrangements obtaining between growers and shipping point firms could serve this purpose in the short-run. These tieing arrangements would prevent a more even distribution of the crop among sellers. Thirdly, there needs to be an alternative for what appears to be competitive behavior on the part of the shippers. It has been observed that even in competitive fresh fruit and vegetable producer markets no grower believes he can

conditions of buyers and sellers. In addition, in the fresh produce industry a buyers' market is associated with a temporary price below or at cost of production, but not even of harvest and transfer. In all cases the hypothesis is concerned with the responsiveness of the price change, the buyer or the seller.

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place his entire stock on the market at once without affecting market price.[143] Even among otherwise competitive sellers there is a reservation demand function or market-release function by which sellers regulate the rate at which a stock or flow of goods is released into the marketing system.[144] The prevalence of incomplete exchange arrangements between producers and shipping point firms, no less than product perishability, however mitigates the inclination of the latter's formation of these reservation demand functions.[145] The problem of a weak seller may be merely a threshold effect — the entire discontinuous price change is attributed to the last unit offered or the final sale.

If this is true it is evidence in support of the weak seller thesis of market instability and the affect of marketing institutions on this stability. The argument and its relation to the buyer-seller market hypothesis is illustrated in the following:

Mr. Kiehl: Is there a price leadership or price followership group (of shippers)?

Mr. Brand: You have your marginal shipper and this would be true of the growers, too, where they don't have a good outlet — if he is not sufficiently informed to know that New York or California is not good today or anything, he would be in a weak position.

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[143] Fouraker, L.E., Lee, W.A., "Competition and Kinked Functions in the Marketing of Perishables", Southern Economic Journal, 22:367, Jan. 1956.

[144] Breimyer, H.F., "On Price Determination and Aggregate Price Theory", Journal of Farm Economics, 39:684, Aug. 1957.

[145] The reservation demand function need not be anti-competitive and could include reasonable restraints on its use such as entry threats. Suits illustrates how an analagous concept, the harvest supply schedule, which differs from the total supply schedule, operates to preclude an otherwise unstable cobweb model in the production and marketing of watermelons; Suits, D.B., "An Econometric Model of the Watermelon Market", Journal of Farm Economics 37:237-51, May 1965.

place his entire stock on the market at one's without significantly affecting market price.[13] Even a very oligopolistic competitive firm has a negatively sloped demand curve,[14] the principle of which implies that a reduction of price will result in a small increase in the quantity demanded by the market. The principle of diminishing marginal productivity, however, implies the limitation of the industry's reduction of these reservation demand functions.[15] The problem of a weak seller may be merely a theoretical effect — the ending diminishing price change is attributed to the last unit offered or the final sale.

If this is true it is evidence in support of the weak seller thesis of market inevitability and the stress of monopolistic tendencies on this stability. The argument and its relation to the buyer-seller market hypothesis is illustrated in the following:

Mr. Kloff: Is there a price leadership or price followership among (or oligopoly)?

Mr. Brand: You have your marginal seller or end this would be true of the grocery, but there don't have a real outlet — if he is not sufficiently informed to know that New York or California is not good today or anything, he would be in a weak position.

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[13] Bowmaker, E.F., Jan., Ibid., "Competition and Price" ... prices in the Marketing of Perishables", ... Agricultural Economics, Ibid., ... Ibid.

[14] Heimert, H.F., "On Price Reduced Action and A Reverse Price Theory", Journal of Farm Economics, Vol. ..., ..., 1951.

[15] The reservation demand function need not be ... curve but could include reasonable modifications on its use such as step ... Unless illustrated how an ... concept, the ... highly scheduled, within ... from the total ... analysis, ... to produce an ... curve ... in the ... of ... relative ... Agricultural Economics, ... 27:337-43, May 19...

Mr. Kiehl: Could he be a weak factor?

Mr. Brand: Yes, it is like the straw that breaks the camel's back. Under ordinary circumstances some people would not have much effect on the market, but when it gets topheavy with volume, decline is almost assured. . .[146]

Figure 8 illustrates the effect of the weak seller on market prices. OT is the maximum supply which could be brought to market in a given market period. Because of the need to parcel out the crop over several market periods, however, the maximum supply is not brought to market each period. At price p_o producers harvest OM, leaving MT for later harvest or for abandonment. The SS curve describes the amount of crop which will be brought to market assuming producers' estimates of present and future prices do not change, there are no drastic changes in weather affecting harvest or crop quality, and each seller or shipper faces the DD demand function. TS, then, is a technical supply curve describing the crop which could be brought to market; SS is an economic supply function indicating what will be brought to market under certain conditions.

The weak seller hypothesis of price fluctuations is concerned with the originator of the price decline, the conditions precipitating this behavior, and the price followership of other sellers. The SS function is drawn assuming known supplies for each seller, given price expectations, and the ability to avoid bringing all supplies possible to market at once. Underlying these assumptions are free trading of crops between buyers and sellers, relative price stability encouraging apportioning the crop over more than one market period, and weather conditions permitting less than the technical supply to be harvested. Financing

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[146]McAllen Hearings, p. 546.

Mr. Klein: Could he be a weak fool?

Mr. Grand: Yes, it is like the corner [illegible] people, [illegible] much effort [illegible] volume, or like [illegible] customer. . . .

Figure 8 illustrates the effect of the weak seller on market prices. OS is the maximum supply which would be brought to market in a given market period. Because of the need to pay cash the crop over several market periods, however, the farmer supply is not brought to market each period. As price is increased beyond p_1, farmers withhold larger harvest or for speculation. The [illegible] crop [illegible] of crop which will be brought to market showing producers' outlays of present and future values to net change, there are no dynamic changes in weather affected by harvest or crop quality, and each seller or supplier faces the DD demand function. D_1, then, is a technical supply curve describing the crop which could be brought to market; it is an economic supply function indicating what will be brought to market under certain conditions.

The weak seller hypothesis of price determination is consistent with the originator of the price machine, the conditions practically this behavior, and the price followership of other sellers. The DD function is drawn assuming known supplies for each seller, given price expectations, and the ability to avoid bringing all supplies possible to market at once. Underlying these assumptions are those bearing of curve between buyers and sellers, relative price elasticity economic [illegible] tioning the crop over more than one market period, and reaction coefficients [illegible] when the technical supply to [illegible]. [illegible]

[illegible] p. [illegible].

Figure 8. Impact of Weak Sellers On Shipping Point Prices For Fresh Fruits and Vegetables.

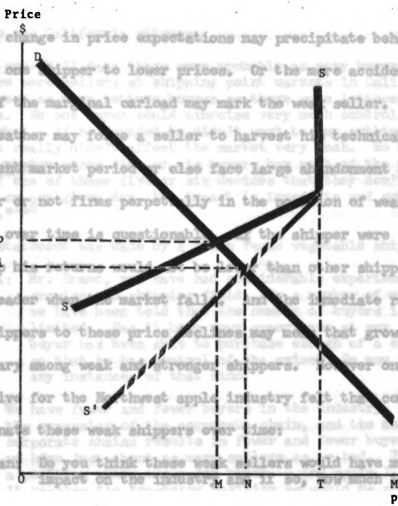


Figure 8. Impact of More Options on Clearing Point Price for Fresh Fruits and Vegetables

and other trading tieing arrangements may prevent crops-supplies from being distributed among shippers in such a manner that the weak seller will price at the market price. A shipper with heavy commitments may find he has substantial supplies unsold at the present price and may shift the SS curve to S'S, reducing the price for all sellers to p_1. Similarly a change in price expectations may precipitate behavior on the part of one shipper to lower prices. Or the mere accident of ownership of the marginal carload may mark the weak seller. Finally impending weather may force a seller to harvest his technical supply in the present market period or else face large abandonment costs.

Whether or not firms perpetually in the position of weak seller can persist over time is questionable. If the shipper were selling his own crop his returns would not be lower than other shippers since he is the leader when the market falls. And the immediate response of other shippers to these price declines may mean that grower returns would not vary among weak and stronger shippers. However one industry representative for the Northwest apple industry felt that competition would eliminate these weak shippers over time:

Rep. Sullivan: Do you think these weak sellers would have much of an impact on the industry and if so, how much impact?

Mr. Stadleman: Any weak seller will have a tendency to push the market down, the point being that these weak sellers more or less weeded themselves out of business today. There is a limited number of them because they have more or less weeded themselves out of the business because their returns have not been competitive so they lose their clientele.[147]

The weak seller hypothesis is frequently related to the numbers of buyers and sellers in the shipping point selling market. Some

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[147]Seattle Hearings, p. 190.

and other trading timing arrangements may prevent complete supplies from being distributed among sellers in such a manner that the weak seller will price at the market price. A shipper with heavy commitments may find he has only a small supplies needs at the present price and may elect the 22 cents to 21½, reducing the price for all sellers to 21¢. Similarly a change in price expectations may precipitate behavior on the part of one shipper to lower prices. On the more pessimist of ownership of the marginal cutback may rank the weak seller. Finally impending weather may force a seller to increase his technical supply in the present market period or else face large abandonment costs.

Whether or not firms perform fully in the prediction of weak seller can prevail over time is problematic. If the shipper were willing his own crop his returns would not be lower than other shippers since he is the leader when the market fails. And the immediate response of other shippers to three price declines may mean that power returns would not vary among weak and stronger shippers. However one transitory representative for the Westbound apple industry felt that competition would eliminate these weak shippers over time:

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[147]Seattle Hearings, p. 120.

industry representatives feel that the declining number of buyers in these markets resulting from the concentration of retail and wholesale purchasing, presumably through increasing the cost of losing a buyer and searching for a new one on the part of the sellers, encourages the weak seller effect and intensifies its influence on market prices. According to one California witness:

> "In the pre-WW II days there were probably as many buyers as there were sellers at shipping point markets in California. There were as many lettuce buyers as there were lettuce sellers. No one buyer could exercise very much control over the market. If he decided he didn't want to buy anthing that day, it really didn't affect the market very much. We now have a system where five or six buyers buy most of the product. Now, if one of these five or six decides that they don't want to buy on any given day, the impact is immediate and quite marked."[148]

A similar statement was made by a South Texas vegetable shipper:

Mr. Marshall: Mr. Brand, you have had considerable experience in the growing and shipping field. On a number of occasions we have been told that the number of buyers is somewhat limited. Has it been your experience at any time a buyer has been able to purchase enough of a commodity so that he has control of the price? Do you know of any instances of that kind?

Mr. Brand: We have fewer and fewer buyers in the industry, because of the expansion of the corporate chain, and the merging of corporate chains results in fewer and fewer buyers. But we have just about as many sellers as we had. You get in a position where one major buyer -- and again I say when it reaches the top-heavy position -- would be able to exercise sufficient influence in the market to bring about a price reduction almost immediately if it were so desired.[149]

The point to be made by these two excerpts is not so much that

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[148] San Francisco Hearings, p. 106-7. For a statistical test and refutation of this alleged market withdrawal tactic of buyers in the California lettuce market, see: Miklius, W., DeLoach, D.B., "Do Lettuce Buyers Exert Oligopoly Power?" Agricultural Economics Research, Oct. 1965, pp. 101-7. The threat of withdrawal of course cannot be measured.

[149] McAllen Hearing, p. 548.

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[14]San Francisco Chronicle, p. 10-C. For a statistical look at tabulation of this same product, see: Fleming, K., Advocate, p.2, "Lettuce Buyers Meet Officially Today" (including typographic changes, Oct. 1, 1963, pp. 1-C, 2-C. The threat of wild west competition cannot be measured.

[15]Grapes Hearing, p. 614.

large buyers influence market prices at shipping point, for the evidence that they do so and in what manner is incomplete, but that such an influence would require the existence of a weak seller.

Under these circumstances the primary source of the resulting market price changes and instability lies with this rather than the number of buyers. That the source of instability is associated with the shipping point market and not the buyers was indicated by the reply of a South Texas grower of fresh vegetables to a question as to whether he had sufficient marketing alternatives for his crop:

Mr. Raitt: How many customers for your products do you have in the (Rio Grande) Valley? Do you feel you have enough?

Mr. Frost: I think we have too many. I think we have too many sheds sometimes.

Mr. Raitt: Why is this bad?

Mr. Frost: Because I think if you had six big carrot sheds in the Valley (instead of 51) that the price would hold up much longer.[150]

The hypothesis of a buyer's or seller's market and the weak seller hypothesis of market stability in the fresh fruit and vegetable industry are reoccurring themes in the Commission's hearings. That they do not seem geographically segregated is only more suggestive of their relation to the nationally shared market sector beyond the local shipping point markets. They are both indicative of interacting supply and demand characteristics operating to produce market price fluctuations; they derive not only from the inelasticity of the demand function facing producers but also from the quality of the marketing effort and trends in the market sector. Finally both hypotheses highlight the

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[150] McAllen Hearings, p. 265.

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Mr. Raitt: Why is this bad?

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The hypothesis of a buyer's or seller's market and the weak seller hypothesis of market stability in the fresh fruit and vegetable industry are reconcilable there in the Commodore's hearings. That they do not seem geographically segregated is only more suggestive of their relation to the nationally shared market sector beyond the local shipping point markets. They are both indicative of interacting supply and demand characteristics operating to produce market price fluctuations; they derive not only from the inelasticity of the demand function facing producers but also from the quality of the marketing effort and trends in the market sector. Finally both hypotheses highlight the

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[1] Mcallen Hearings, p. 245.

interdependence of the vertically related market sectors of the industry. Supplier concern with the quality of the forward marketing effort is not unique to the industry, but it is an outstanding feature of the industry.

The quality of this forward marketing effort is inadequately described solely by the numbers of buyers and sellers. It is true the possibility of coordinating the efforts of buyers and sellers is enhanced with fewer numbers.[151] But it is equally possible the weak seller effect increases with declining numbers and larger sizes of sellers. A competitive balance promoting the desired stability of prices is to be sought.

Another source of market price instability may be the quantity and quality of market information. Even with a well developed Federal Market News Service and the frequent telephone contacts of buyers and sellers throughout the country, prices may vary so frequently by grades, sizes, and markets that the observed market instability is principally a reflection of the correcting process. Alternatively, market instability may result from a lack of market information. Producers of fresh fruits and vegetables require market information on which to base a number of production and harvesting decisions. The quality of historical and outlook information for these purposes is affected by price stability. One producer put the problem as follows:

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[151] For example a study recently concluded that the large numbers of packers of California fresh fruit made it difficult for the several competitors to anticipate competitive reactions of one another: Adams, J.A., Jones, K.R., Economic Factors Affecting the California Fresh Fruit Industry, California Department of Agriculture, Bureau of Marketing, Marketing Report No. 20, Dec. 8, 1965, pp. 38-39.

interdependence of the vertically related market sectors of the industry. Supplier concern with the quality of the forward marketing effort is not unique to the industry, but it is an outstanding feature of the industry.

The quality of this forward marketing effort is inadequately described solely by the numbers of buyers and sellers. It is true the possibility of coordinating the efforts of buyers and sellers is enhanced with fewer numbers.[11] But it is equally possible the weak seller effect increases with declining numbers and larger sizes of sellers. A competitive balance providing the desired salability of prices is to be sought.

Another source of market price instability may be the quantity and quality of market information. Even with a well developed Federal Market News Service and the frequent telephone contacts of buyers and sellers throughout the country, prices may vary so frequently by grades, sizes, and markets that the observed market instability is principally a reflection of the corrective process. Alternatively, market instability may result from a lack of market information. Producers of fresh fruits and vegetables require market information on which to base a number of production and harvesting decisions. The quality of historical and outlook information for these purposes is affected by price salability. One producer put the problem as follows:

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[11] For example a study recently concluded that the large numbers of packers of California fresh fruit made it difficult for the several competitors to anticipate competitive reactions of one another: Adams, J.A., Jones, K.C., Economic Factors Affecting the California Fresh Fruit Industry, California Department of Agriculture, Bureau of Marketing, Marketing Report No. 20, Dec. 8, 1945, pp. 34-39.

Mr. Raitt: Sometime before planting, what information do you need, if any, to help sort out this marketing program? Do you feel that you have adequate information regarding total production and some idea of what the demand would be? Do you feel then you have adequate information at the time you are making these decisions (to plant) or would you like something else?

Mr. Schuster: I really cannot answer the question good enough. On the minor items, you really don't have any information at all.[152]

The relative market knowledge possessed by buyers and sellers at shipping point and affected by the operation of retail branch buying offices and shipping point buying brokers may also be responsible for some price fluctuations. In expressing this view one Texas shipper suggested the lack of market information was frequently responsible for price instability sometimes attributed incorrectly to supply conditions:

> "There are (citrus) growers who subscribe to reliable sources of information and are well informed as to current market situations. To a great degree, these are the ones who cannot be stampeded into making sales which are unfavorable to the grower. But I would hazard a guess that less than 50 percent of the total volume of fruit sold is in the hands of these informed growers who have the ability and are willing to hold for a reasonable market price. . . There is no reason to believe that citrus is subject to price demoralization because of market glut, except for lack of market information by the producer, in my opinion.[153]

Another producer of fresh vegetables related an experience suggesting lack of market information might be responsible for varying returns for like-quality crops:

> "Our information that the growers have is very poor. . .at one end of the (Rio Grande) Valley, with carrots, the grower might be getting $20 a ton and on the other end of the Valley he may be getting $40. I know recently in this last part of

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[152] McAllen Hearings, p. 193.

[153] Ibid., p. 435.

Mr. Smith: Overall before you retire, what further action can I or the Board, if any, to help you, or if you have anything you feel that you have altogether in the matter of market promotion and more like of what is wanted and/or needed? Do you feel that there are possible decisions (be plain) or is it your like something else?

Mr. Schuster: I really cannot answer the question good enough. We might think, you really could have any information at all.[152]

The relative market knowledge possessed by buyers and sellers at shipping point and affected by the operation of retail buyers' offices and shipping point buying problems may also be responsible for some price fluctuations. In explaining this view one Texas shipper emphasized the lack of market information was directly responsible for price instability by stating as follows to supply conditions:

> "There are (others) who are willing to reliable sources of information and are well informed as to current market situations. In a group is these there are this area who cannot be classified into selling areas which are unfavorable to the grower. But I would imagine a large that here is 50 percent of the total volume of fresh would be in the hands of those informed growers who have the ability and are willing to hold for a reasonable market price. . . There is no reason to believe that Texas is subject to price deterioration because of limited yield, except for lack of market information by the producer, in my opinion.[153]

Another producer of fresh vegetables related an experience suggesting lack of market information might be responsible for varying returns for like-quality crops:

> "Our information that the process here is very poor. . . at one of the (Rio Grande) Valley, and I remember, the grower might be getting $2 a ton out on the other end of the valley he may be getting $15.

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[152] Allen Hearings, p. 102.

[153] Ibid., p. 432.

the carrot deal this year I know in one day — well, I will say I was getting $40 and my shipper told me that he was paying $20.[154]

Another cause of market instability in the fresh fruit and vegetable industry is the prevalence of excess capacity in shipping point markets.[155] The effect of this excess capacity is shipper encouragement of producers to plant additional supplies in order to keep local packing plants operating at capacity. This encouragement may take the form of shipper financing of producers or shipper integration into production operations to assure a source of supplies. The resulting additional supplies contribute to market instability both from the supply and marketing sector sides of the market. Excess capacity in the wholesale terminal markets may also be responsible in part for price instability in the fresh fruit and vegetable industry.[156]

Market Conflicts as Sources of Instability. As the technical input-output functions of buyers and sellers in the fresh fruit and vegetable

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[154] Ibid. p. 323.

[155] NCFM Technical Report No. 4, p. 98. The excess capacity spoken of is in addition to the normal seasonal excess capacity of food assembly markets. The problem of shipping point excess capacity was put by a South Texas shipper:

> "We run a car of carrots about an hour a day. It should be eight. We have a big setup where we can run approximately a car of carrots an hour and we should run eight hours a day on that machine to get the efficiency out of it. But if I run eight hours a day and everybody else did, we would have 300 cars of carrots to go out and the country can consume only 75. I realize my capacities and I run what I can sell... If I run to my efficiency in the shed, I would be packing many times what I can dispose of satisfactorily." McAllen Hearings, p. 630.

[156] NCFM Technical Report No. 4, p. 110.

the carrot deal this year I know in one day -- well, I will say I was feeling [illegible] for both the time we were putting in."[154]

Another cause of market instability in the fresh fruit and vegetable industry is the prevalence of excess capacity in shipping points markets.[155] The effect of this excess capacity is shipper encouragement of producers to plant additional supplies in order to keep loyal packing plants operating at capacity. This encouragement may take the form of shipper financing of producers or shipper integration into production operations to assure a source of supplies. The resulting additional supplies contribute to market instability both from the supply and marketing sector sides of the market. Excess capacity in the wholesale terminal markets may also be responsible in part for price instability in the fresh fruit and vegetable industry.[156]

Market Facilities as Sources of Inflexibility. As the technical improvement functions of buyers and sellers in the fresh fruit and vegetable

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[156]USDA Technical Report No. 4, p. 110.

marketing channel are extremely interdependent, owing principally to product perishability, it is important the marketing tactics and strategies of firms both as buyers and sellers be coordinated and their goals congruent. This interdependence and need for coordination gives rise to a separate set of influences on market price stability from those above. If the marketing sector were neutral in the industry, each market level would merely reflect, without influencing, final consumer demand to the production sector. But because of the technical and economic interdependence of the sectors, none can be neutral. The profit and cost accounts of each level are inextricably related to the preceding and succeeding levels. Especially in this industry there is no mechanism for automatically allocating the costs of market risks among the levels; this is an institutional allocation manifest principally in the forms of exchange and integration observed in the industry. And at least one market sector, food retailers, inherently cannot be neutral to consumer demand, the effect of their decisions in pricing, merchandising, brand selection and the like having an obvious affect on consumer demand and choice.[157]

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[157]This strategic position of the retailer in the distribution channel and the influence it provides over consumer demand is the basis for the Commission's consumer proximity hypothesis of market power. The Commission identified the direct contact of the retail sector with the consumer as the most important source of retail market power, defined as the ability to influence terms of trade in the retailer's favor: Food from Farmer to Consumer, Report of the National Commission on Food Marketing, Washington, D.C., June 1966, pp. 95-96. The significance of this can only be appreciated when alternative sources of market power-sales concentration, vertical integration into wholesaling, private labelling, superior financial resources, and the like-are considered. The importance attached to this hypothesis of market power depreciates the importance given to organizational forms of business at retail (chainstore, affiliate, cooperative, etc.) and size of retail stores and firms.

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Although some market levels cannot be neutral in the marketing channel, either because of their position in the channel or because their profits and costs are affected by the behavior of the entire marketing channel and its treatment of risk, it is possible consumer demand would be reflected accurately to the production level if all marketing goals of firms in the channel were congruent. The final markets would still influence demand, but the resulting demand could be satisfactory in level and stability for other market levels. However in order to accommodate industry product and marketing risks, institutions have developed which appear to be responsible for conflicts in the economic goals and marketing tactics between the various market sectors. These are the subject of the remainder of this chapter. By and large the existence of these conflicts was made explicit in the hearings of the Commission. But their implications for the level and stability of prices, their institutional basis and relation to industry risks, and their significance for the problem of vertical coordination of a market channel were not developed in detail.

The economic conflicts which appear to have evolved in the fresh fruit and vegetable distribution channel are of four types. Two of these are institutionally-based conflicts of interests. The first of these is partial integration of shippers into production and the concurrent handling of supplies for producers lacking marketing facilities. While it would appear the goals of the shipper and producer are brought closer together in this manner since the shipper comes to operate in both market sectors, the congruency of goals applies only to the integrated block of supplies. As explained earlier the principal motivation of this partial integration is not profit participation but

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the assurance of supplies for the packing and marketing operation. If profits stimulated this integration it would probably proceed to a completely integrated system. Nor could the partially integrated grower-shipper survive without the pool of growers who lack the financial ability and cooperative inclination for integration into shipping point markets. At any rate this partial integration, it will be argued, is destabilizing to that block of supplies not integrated with the marketing sector.

A second identified interest conflict associated with the shipping point exchange arrangements and the difficulty of producers' integration into marketing is the economic forward orientation of shipping point firms. According to Commission findings, "Shippers feel that their business expansion is not limited by lack of supplies, but rather by lack of sales."[158] The effect is that while the shipper is geographically closest to the production sector and in many cases is the producers' delegated marketing authority the shippers' marketing behavior is tailored to the needs and requests of retailers and wholesalers. This would not be relevant for market stability if all channel goals were congruent. But coupled with the influence of retail market behavior on final demand, it appears shipper economic decisions are not always perceived as being in the best interests of the production sector. One result has been the stimulation of cooperatives in the

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[158] Food from Farmer to Consumer, op. cit., p. 50.

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Another apparent industry conflict centers on the disparity between optimum price and output levels for the various market levels. The assumption of the present industry organization is that the price jointly determined by the interaction of retailers and consumers and subject to change with that interaction will produce that output and price at preceding market levels expected or aimed for when planning production and marketing efforts. There does not seem to be any a priori reason why this should be so, especially if all channel members are not motivated toward the same economic goals. The channel members, instead, may be divided into those depending solely on fresh fruits and vegetables for profits and those depending on other products and into those merely servicing the product in the marketing system without assuming the risks of product ownership and those holding title to the product in the marketing process. These distinctions give rise to two final marketing conflicts.

With the latter distinction producers would fall into the second group, shippers and brokers into the first. As explained in Chapter 3 a large proportion of shippers and most brokers are paid for their

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[159] For example a representative of the California industry indicated the largest cooperative in the country, Sunkist Growers Inc., and other cooperatives were encouraged to form because, "At the turn of the century, marketing of citrus was largely under the control of dealers and speculators who had very little interest in the problems of the grower and who sought to handle the crop as much as possible to their own advantage." San Francisco Hearings, pp. 136-7. Economic conflicts as sources of cooperative formation differ from monopsonistic producer market sources as mentioned in, Boulding, K.E., "Does Absense of Monopoly in Agriculture Influence the Stability and Level of Farm Income?" Joint Economic Committee of the 85th Congress, Policy for Commercial Agriculture, Nov. 22, 1957, pp. 42-50.

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marketing services in a manner which is inflexible to the price obtained for the product. Brokers operate on a set or percentage fee, and incomplete exchange is typical in shipping point procurement from producers. These forms of remuneration for marketing services result in a close relation of profit and output levels for these firms. The result may be in conflict with the desired output and price levels of producers or detrimental to producer efforts to control marketings.

The above distinction between those firms solely dependent on fresh produce and those for which these products are a complement to a broad range of product offerings, separates the retail market sector from the remainder of the marketing channel. For a perishable product with a relatively long growing season, a high fixed investment in production, and susceptibility to sudden changes in output due to the vagaries of weather, it is essential the producer be able to predict demand in advance and to control movements to consumers in periods of sudden surplus. The retail multi-product marketing strategy may at times prevent these. This strategy could preclude the producers influencing demand through price changes among other things. When the retail sector practices variable price merchandising there is, again, no a priori reason why the behavior of the retail sector will be congruent with the goals of the production sector.[160] On the contrary there is considerable evidence the result may be price instability in the farm markets.

These are the four identified market conflicts in the fresh fruit and vegetable marketing sector. They are for the most part short-run

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[160]Retail variable price merchandising, a variant of the marketing mix approach to selling, is discussed below and in Nelson, P.E., Preston, L.E., Price Merchandising in Food Retailing: A Case Study, University of California, Institute of Business and Economic Research 1966.

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conflicts, probably corrected in time. But taken together and occurring repeatedly they are of sufficient importance to maintain a perpetual state of farm price instability. Each threatens the market coordination justified by the interdependence of the vertically related market levels. The four conflicts — partial production integration, forward market orientation, sales and profit maximization, and retail marketing strategy — will be taken up again after a discussion of manifestations of market instability.

Manifestations of Price Instability and Producer Adjustments. Market instability may be observed directly in the form of price variations or may be inferred from certain forms of market behavior and institutions. The first method was the subject of Chapter 4, the second was the subject of Chapter 3. In this part of the study an attempt is made to integrate the two methods through the evidence gained in the hearing process. This section is concerned with manifestations in the producer sector to market price instability; the next continues the study of the institutional structure of the market as an adjustment to this instability. In both this and the next section there is an identification problem. Behavior and market institutions from which the problem and causes of market instability may be inferred also have other referents. For example, producer-first handler marketing contracts not only serve to reduce the producers' market risks but may also cause economic crop abandonment for producers without such contracts; they may also serve the shippers' purposes of quality control over the production process.

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instability since it presumably would not exist unless market conditions changed between the time of planting and harvest.[161] Abandonment would not be a persistent feature of the industry except for reoccuring inaccurate price expectations. The existence of crop abandonment is one manifestation of the problem of market coordination and has an obvious relation to resource allocation. According to a South Texas representative:

> "At some time during each production season, a portion of the vegetable acreage is either abandoned completely or in multiple harvest crops, only a small portion of the production is actually sold. While this is not unusual in vegetable production, the risk of receiving a low price or having to abandon a field is a hinderance in obtaining adequate credit or justifying the adoption of optimum production practices."[162]

This problem may be more severe in South Texas than elsewhere but perusal of output and abandonment data for a number of states indicates the situation is not unique there. The following exchange involves a grower-shipper of California fruits and illustrates fruit abandonment in that state:

> Rep. Purcell: So you have any alternative but to keep shipping? The basic question might be why do you keep doing this if you keep losing money? I realize you can't just chop up the trees unless you are going out of business. But do you have any alternative except to keep selling at any price you can get?
>
> Mr. Garabedian: I, myself, didn't harvest the last half of them. I chopped some of the trees off. In some orchards I didn't harvest the second picking.[163]

And a producer of California vegetable crops replied the following:

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[161] This need not be true if the abandonment was for the purpose of influencing prices; evidence presented in Chapter 4 suggests abandonment is a reaction to price and harvest cost and not a price-making force.

[162] McAllen Hearings, p. 33

[163] San Francisco Hearings, p. 523.

inelasticity since it presumably would not exist unless rational decisions changed between the time of planting and harvest.[1] Abandonment would not be a regrettable feature of the industry except for reasonably inaccurate price expectations. The abundance of crop abandonment is one manifestation of the problem of market coordination and has an obvious relation to resource allocation. According to a fourth farm representative:

> "At some time during each production season, a portion of the vegetable acreage is either abandoned completely or in multiple harvest crops, only a small portion of the production is actually sold. While this is not unusual in vegetable production, the rule of receiving a low price or having to abandon a field is a difference in attaining adequate credit or justifying the adoption of off-the production practices."[2]

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> Rep. Purcell: Do you have any alternative but to keep shipping? The basic question right's be why do you keep doing this if you keep losing money? I realize you can't just chop up the trees unless you are going out of business. But do you have any alternative except to keep selling at any price you can get?
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[2] Callen Hearings, p. 33

[3] San Francisco Hearings, p. 522.

Mr. Marshall: Then this cabbage that the shipper won't take, what do you do with that?

Mr. Chinn: Disc it up, chop it up.

Mr. Marshall: Is that customary for most growers to do that?

Mr. Chinn: Yes, sir; very customary.[164]

There is no evidence economic crop abandonment is an increasing or decreasing trend. This need not be evidence of the failure of producers to learn from mistakes since different producers may make the same mistakes each year. Or, the personality characteristics of producers might make them subject to mistakes or highly optimistic. Because of the fixed investment in orchards persistent abandonment might be tolerated in fruit crops longer than vegetable crops. Data on crop abandonment of fruit crops is not available, but one witness espoused the curious theory,

> "In any given year, costs have little, if any relation to selling price, but over a long period, costs must be recovered or the owner is, of course, bankrupt. This does not necessarily mean removal of the trees, as apple growers are an unduly optimistic race of people and new operators come along to operate orchards which because of age — variety — or location, are no longer profitable.[165]

The economic abandonment of the independent producer would be governed by different criteria from those regulating the economic abandonment of the grower-shipper normally. To complete the harvest of a crop the farmer would only require that the variable harvesting

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[164] San Francisco Hearings, p. 653.

[165] Seattle Hearings, p. 88. The personality and risk-preference of fresh produce growers and marketers may need more careful study than can be given here. Jones has argued the risks associated with the lettuce market have attracted a group of entrepreneurial gamblers who, through their quest for unusual profits, disrupt the market and perpetuate the market risks. Jones, W.O., "A Case Study of Risk Distribution" Journal of Farm Economics, 33:235-41, May 1951.

Mr. Mansfield: Then this ceiling that the designer works to, what do you do with that?

Mr. Odium: Dies it up, cuts it up.

Mr. Mansfield: Is that ceiling for most growers to be fixed?

Mr. Odium: Yes, sir; very definitely.[14]

There is no evidence economic crop abandonment is an irreversible or deteriorating trend. This trend may be a lifting of the inflexible of producers to learn from studies other different production methods the same materials earlier. Or, the eventually characterization of producers might make their farms or ranches or highly profitable. Because of the fixed investment to crop a particular piece of land might be tolerated in fruit crops longer than row-crops. Data on crop abandonment of fruit crops is not available, but one witness espoused the curious theory,

> "In any given year, costs have to be, if any relation to selling price, but over a long period, costs have to come down or the owner is, of course, bankrupt. This does not necessarily mean removal of the trees, as apple growers are an unfairly considerable mass of people and new operators go along to operate orchards which become old age — variety — or location, are no longer profitable."[15]

The economic abandonment of the irrigable production would be governed by different criteria from those regulating the economic abandonment of the power-shiver recently. To complete the harvest of a crop the farmer would only require that the variable input-

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[14] Texas Personnel Interview, p. 173.

[15] Seattle Hearing, p. 83. The personality and disinterestedness of fresh produce growers and handlers may lead more careful study than can be given here. Since its record the trade associated with the Jackson Heroes have advanced a group of entrepreneurial welfare who, through their deep for mutual profits, change the product and perpetuate the market trade. Jones, W.O., "A Case Study of Fruit Distribution" Journal of Farm Economics, 32:638-42, May 1951.

costs exceed product price whereas the grower-shipper would require that market price exceed both harvest and packing charges.[166] As one packer stated:

> ". . .if we can't get packing charges out of our particular crop or commodity at that given time, we will leave it in the field. We figure that the cheapest part of the whole cost of operation is the growing, and if you haven't enough of a market on your product to get at least packing charges out of it, we either slow down our operations or we discontinue packing until we can get packing charges."[167]

In practice, however, both the independent and integrated producer will cease harvesting at the same product price because, as will be shown, the producer pays the shipping point marketing costs including packing, grading, and the like just as the grower-shipper does.

Two questions concerning economic abandonment are the mechanisms employed to determine which crops will be abandoned and who shall bear those costs and the question of whether there might be errors in crop abandonment. Errors in this matter would seem precluded to the extent the abandonment is determined by the size of the market and the market price rather than a tool for influencing market price. But the incidence of costs of abandonment would still be of importance. The threat of abandonment to producers may explain in part the integrated structures obtaining between producers and shipping point marketing firms;

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[166] If the crop abandonment has as its purpose to influence price and returns, it would only be rational if the producers faced an inelastic demand function. If as some have suggested there is an elastic demand for lettuce, all observed crop abandonment could be attributed to the market price-harvest cost relation. But most crops have inelastic demands and abandonment for the two reasons cannot be separated satisfactorily. For evidence relating to the elasticity of demand for lettuce, see: Hoos, S., Statistical Analysis of the Annual Farm Prices for Seasonal Types of Commercial Head Lettuce, 1918-47, University of California, Giannini Foundation Agricultural Econ. Report No. 92, 1948.

[167] San Francisco Hearings, p. 696.

costs exceed product price whereas the producer-shipper would require that market price exceed both harvest and packing charges.[146] As one packer stated:

> ". . .if we can't get packing charges out of our particular crop or commodity at that given time, we will leave it in the field. The figure that the cheapest part of the whole cost of operation is the packing, and if you haven't enough of a margin on your product to get at least packing charges out of it, we either slow down our operations or we discontinue packing until we can get packing charges."[147]

In practice, however, both the independent and integrated producer will cease harvesting at the same product price because, as will be shown, the producer faces the shipping point marketing costs including packing, grading, and the like just as the grower-shipper does.

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[147] San Francisco Hearings, p. 695.

the same threat represents the cost of market independence for the non-integrated producer.

Because of the atomistic organization of fresh fruit and vegetable producers attempts are made to institutionalize group forms of economic abandonment. These not only spread the costs of abandonment over large numbers of producers, though not comparably among large and small producers, but also insure a more rapid response to crop abandonment. The collective instruments exist because of the price instability and the difficulty of correcting it through individual or voluntary measures. A representative of a trade association of 2300 Washington State Apple producers provided the following illustration of these instruments:

Mr. Corkey: Could you be a little more specific in just how your association influences prices when they appear to you to be unduly low?

Mr. Lowe: Of course, we cannot or do not make any attempt to fix price at all, but we can recommend to our membership that in the face of the prevailing conditions that we feel that certain grades and sizes are worth so much money and we urge them to try to market accordingly.

Mr. Corkey: You would recommend to them, I assume, if prices are unduly low at a certain time that they not market at that time?

Mr. Lowe: That is right.[168]

Marketing orders and agreements along with cooperatives may also provide the institutional setting for collective abandonment.

The marketing sector counterpart of economic abandonment is orderly marketing or, in the extreme, market withholding. These become less feasible means of influencing prices as product perishability increases

[168]Seattle Hearings, p. 82.

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[156]Seattle Hearings, p. 82.

but are commonly and successfully employed for those crops which can be stored even for short periods. For those crops which cannot be stored after harvest, regulation of harvest intensity may serve the same purpose. Shippers may assume this regulatory role as is illustrated in the following exchange:

Rep. May: You made the statement that industry flexibility can influence prices. Would you go into that a little more?

Mr. Peters: Yes. It is more difficult for us in our area to make use of this particular point than it would be in some area where they store the potatoes. But it is industry flexibility from the standpoint of the amount of potatoes that is being shipped. During our marketing season, it is sometimes difficult because of heat to encourage growers to wait an extra day before they dig. But sometimes an extra day of waiting just to let the surplus on the market disappear before further shipments are made can have quite an effect.[169]

Economic crop abandonment, then, whether suggested to producers by trade associations or shippers or assumed voluntarily by producers is a serious problem in the fresh fruit and vegetable industry. As it represents mistaken production in the sense that it would not clear the market at acceptable prices, it indicates less than optimal vertical coordination. Excepting those producers gambling on a shortage of supplies in other areas of the country and purposely planting more than the market will normally take, the cause of these mistakes can only be inadequate resource allocation signals or prices at the farm level. For the fruit industry, chronic excess productive capacity might be one explanation for crop abandonment; although the mistakes in planting fruit trees persist for long periods of time, there are short-run cultivation and harvesting adjustments which can be made.

[169] San Francisco Hearings, p. 728.

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> Rep. May: You made the statement that industry fixed fully can influence prices. Would you go into that a little more?
>
> Mr. Peters: Yes. It is more difficult for us in our area to make use of this yardstick value point than it would be in some area where they store the peaches. But it is industry flexibility from the standpoint of the amount of peaches they is being shipped. During our marketing season, it is an endless difficult because of heat to encourage growers to wait an extra day before they ship. But sometimes an extra day of waiting just to let the surplus on the market disappear before further shipments are made can have quite an effect.[1]

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[1] San Francisco Hearings, p. 728.

But it is difficult to assign chronic excess capacity to the fresh vegetable production sector where major product and enterprise adjustments can be made in the very short-run.[170]

The alternative explanation of persistent crop abandonment is the failure of the pricing system to transmit stable prices to producers on which production decisions can be based. As noted previously a large block of production is integrated with the shipping point market sector and does not enter into the explicit pricing process. Moreover, shippers in the search for supply assurance and stability may encourage additional supplies through marketing contracts and financing. For both these reasons the non-integrated supplies, the supplies for which most pricing data is reported, may be priced differently than if all shippers were to enter the open market for supplies. Used to supplement the marketing requirements of the integrated shipping point firms, these non-integrated supplies may be more vulnerable to market fluctuations than the integrated supplies.

A second manifestation of price instability is product diversification. Risk reduction through diversification is at the expense of productive efficiency. In order of decreasing specialization the producer may first add other, more stable fruit and vegetable crops to his product offering, then if possible add other kinds of crops to

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[170] While true in general for vegetable crops some machinery is fixed to the crop and land to the enterprise. One South Texas producer, asked why he didn't substitute more stable crops into his production pattern, replied, ", "Perhaps you ask why we don't change to another crop. Such a change is not easily done. Machinery representing thousands of dollars is not adaptable to other crops. Best use of our land and crop rotation patterns must be considered for many years in advance. By adhering to a certain crop, a farmer establishes a reputation over the years which is not easy to give up." San Francisco Hearing, p. 632.

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[1] "Idle time in general for vegetable crops were mandatory in order to
this crop and land to the consumption. See Dutch "Crisis procedure,"
as/of why he didn't substitute more staple crop a like his production
pattern, modified." . "Savings was all why he not it chose to practice
crop. Such a crisis is not usually done. Machinery requirements
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years in advance. By adhering to a certain crop, a farmer develo-
lishes a reputation over the years which is not easy to give up."
San Fernando Country, p. 62.

his operation, and finally produce for both the fresh and processed produce markets.[171] Grower-shippers often specialize in only one crop especially in the major producing areas and for crops such as lettuce, onions, apples, peaches, and the like.[172] But probably a majority of fresh fruit and vegetable producers are diversified into either other crops or the processed market. As one producer put it:

> "During any single year I have usually split my vegetable production into a certain portion set aside for processing-type vegetables and a certain portion for the more speculative fresh market vegetables. By growing a processing vegetable under contract I am able to protect myself to the extent of at least returning a small profit should the fresh vegetable market be a failure."[173]

This attitude and diversification of production into both markets is not so common in the major producing areas but is quite widespread in other areas of the country. It is a reflection of the market instability and risk faced by producers who must make production commitments on the basis of little more than unstable historical experience. The situation is summarized by one witnesses' attitude who produced cotton and grains in Texas:

Mr. Morrow: Yes, sir. The fewer vegetables I depend on, the better off I am.

Mr. Kiehl: The fewer vegetables you have, the better off you are?

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[171] An early study of the price and yield variability of selected fresh vegetables was intended to aid producers in diversifying into crops which would decrease total farm price and income variability: Kling, W., Determination of Relative Risks Involved in Growing Truck Crops", Journal of Farm Economics, 24: 695-98, 1942.

[172] An estimated 47 percent of fresh fruit and vegetable grower-shippers specialized in handling only one crop in 1955 and 1965: NCFM Technical Report No. 4, p. 88.

[173] McAllen Hearings, p. 354.

his operation, and finally produce for local or broad consumption
precise answers."[1] Two-thirds often give conflicting or only over-
cautious, applies, peaches, and the like.[2] But few offer a variety of
fresh fruit and vegetable products are diversified into either cotton
crops or the processed markets. As one producer put it:

> "During any given year I have usually eight or ten acres in production into a certain point in all parts for processing-type vegetables and a certain portion for the more specialized fresh market. By working a portion of the land into the fresh vegetable market I am able to prevent the fresh vegetable market be a failure."[3]

This attitude and diversification of production into both markets is not so common in the major producing areas but is quite widespread in other areas of the country. It is a reflection of the smaller irrigability and risk faced by producers who must make production considerations on the basis of little more than unstable historical experience. The situation is summarized by one witnessed a cattle who produced cotton and grains in Texas:

> Mr. Norton: Yes, sir. The fewer vegetables I depend on, the better off I am.
>
> Mr. Mehl: The fewer vegetables you have, the better off you are?

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[2]An estimated 47 percent of fresh fruit and vegetable crops specialized in Hamilton only one crop in 1915 and 10 f: [illegible] nical Report No. 4, p. 84.

[3]Dillon Hearings, p. 314.

Mr. Morrow: The fewer vegetables I try to depend upon for an income, the better off I am. It is so spasmodic you can't depend on getting a certain price for it.[174]

Crop abandonment and product diversification are the two principal manifestations of market price stability in the fresh fruit and vegetable production sector. In its own way each is also an adjustment to the uncertainty and risk surrounding unstable price levels. Market structure and trends in economic organization are also responses to these unstable prices. The unique organizational arrangements and exchange relations in this industry are particularly good illustrations of the manner in which risk can influence the organization of the marketing sector, which in turn may modify that risk or its incidence.

Marketing Institutions and Risks. Chapter 3 reviewed the principal elements of economic organization in the fresh fruit and vegetable industry; earlier in this chapter there was a discussion of four perceived conflicts among the market levels in this industry. In this section of the study, the relationships among these conflicts and market organization and the implications for producer price stability are examined. A number of relations will be developed, no one of which taken by itself is wholly applicable to all crops or areas of the country nor entirely appropriate for explaining the relations between producer price instability and the organization of the marketing sector. In this sense a synthesized industry problem is developed. This is necessary both because it is relevant to national public policy for this industry and because it provides the framework for examining crop and area divergencies from the national model.

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[174] Ibid, p. 205.

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[1] Op. cit., p. 202.

The Shipping Point Exchange Relation. For the producer the incomplete exchange arrangement is an antonym of a forward pricing procedure though it is completely consistent with forward delivery arrangements. With forward pricing the producer is given some indication of the price to be expected for the crop prior to planting or, at a minimum, prior to harvest. The economic basis for such an arrangement is the resulting improvement in the allocation of production and harvest resources. A forward pricing system may rationalize much of the production process where prices are historically unstable. The shipping point incomplete exchange arrangement, to the contrary, prevents rationalization in unstable markets. The producer not only lacks expected price information at planting time but also at harvest time when several decisions have yet to be made such as the intensity of the harvest effort, the choice of marketing agent, the marketing services to be added to the crop, and even the potential crop abandonment decision. Further, as the purpose of a forward price system is to provide protection against market instability for the producer, the effect of the incomplete exchange is to increase his vulnerability to market disturbances.

A general description of the prevalence and economic implications of the incomplete shipping point exchange arrangement was given in Chapter 3. There it was argued these arrangements are an attempt to deal with the market instability inherent for a perishable product marked by extended distribution channels and unexpected frequent changes in yield and output. There would be no reason for the existence of such exchange arrangements if there were no forward market risks and instability. The distinguishing characteristic of these is that the shipper agrees to perform the shipping point marketing services and

The Shipping Point Marketing Problem. For the producer the incomplete exchange current is an example of a forward pricing problem though it is complicated by added terms of delivery charges. With forward pricing the producer is given some indication of the price to be expected for the crop prior to planting or, at a minimum, prior to harvest. The economic basis for such an arrangement is the resulting improvement in the allocation of production and increased returns. A forward pricing system may rationalize much of the production process where prices are traditionally unstable. The shipping point transfers exchange arrangement, to the contrary, prevents rationalization in available markets. The producer not only loses expected price information at planting time but also at harvest time when several decisions have yet to be made with regard to the timeliness of the harvest effort, the choice of marketing point, the marketing channels to be added to the crop, and even the potential crop allocation and destination. Further, as the purpose of a forward price system is to provide protection against market instability for the producer, the effect of the two plans exchange is to increase his vulnerability to market disturbances.

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assume responsibility for the sale of the crop without the risks of product ownership.

It is difficult to describe all the possible forms of incomplete exchange in shipping point markets. A variety of these is given in the testimony of a Northwest representative:

> "In a normal year, most of the fruit is sold F.o.b. packing plant for the growers' account. Only a limited volume of fruit is purchased orchard run or on trees. There are many independent packing houses, that is, private firms which will handle a grower's fruits in exactly the same manner as do the cooperatives except that the house makes a fixed charge for its packing, selling, storage and other services instead of doing it on a cost-basis as the coops do.
>
> These houses, the same as the coops, include the fruit in one or more pools and proceeds are distributed to the growers according to the volume and quality of the produce, without regard to the date when the individual grower's fruit is sold or the price received for it. Some growers will have their fruit packed for them by an independent packing organization but will not include their fruit in a pool and will decide when and at what price their packed fruit is to be sold. Some lots of fruit are purchased by independent packers from the grower at the time of harvest or during the storage season, but most of the fruit is sold for the grower's account so that the growers receive the net after deducting costs of packing, storing, and selling and, in the case of auction sales, the cost of transportation."[175]

These variations of the exchange relation for just one area of the country are equally found elsewhere. A consideration of the variety of contractual and financing arrangements accompanying these variations increases the possible combinations greatly. But the essential characteristics of the incomplete exchange arrangement are all mentioned: (1) the grower can hire a set of divisable marketing services from the shipping point firms, allegedly at cost in the case of the marketing cooperative, but always for a pre-determined price or price formula; (2) the product may lose identity at shipping point and the grower's compensation be based on average prices and contributions; (3) the

[175] Seattle Hearings, p. 26.

assure responsibility for the acts of [illegible] the policy of product ownership.

It is difficult to discover if the pencil is for a stenographic customs in slightly particularistic. A variety of cases is given in the textbook of a Harvard economist as follows:

> "In a period of rapid rise of the price level, producing plant for the current economy. [illegible] of [illegible] of goods is reduced and [illegible] [illegible] [illegible] will be a [illegible] [illegible] [illegible] [illegible] on the one hand [illegible] [illegible] [illegible] for the public, [illegible] [illegible] [illegible] of doing it on a [illegible] as the corporation.
>
> These losses, like [illegible] in the price [illegible] in one or more [illegible] [illegible] [illegible] [illegible] promises according to the [illegible] of the price, without regard to the [illegible] individual producer [illegible] is sold or the price [illegible]. [illegible] [illegible] have their result [illegible] [illegible] [illegible] [illegible] communication but will not [illegible] their [illegible] [illegible] will decide when and at [illegible] their [illegible] [illegible] to be sold. Some lots of [illegible] are [illegible] [illegible] packers from the owner as [illegible] or [illegible] slaughter pens, but most of it [illegible] sold for [illegible] account so that the [illegible] [illegible] [illegible] cases of [illegible], [illegible] [illegible], in the case of auction sales, the cost of [illegible]."[1]

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[1] Seattle Hearings, p. 24.

grower may delegate all marketing decisions to the shipping point firm, again at a price, or may elect to make his own marketing decisions through the shipper; (4) the grower may be required to pay all shipping point marketing costs in the form of agreed upon packer-shipper fees before receiving compensation for his crop; and (5) the producer does not know the price of the crop when it is harvested and introduced into the marketing system.

These characteristics are evident in the forms of exchange described by a South Texas shipper of fresh produce:

> "We buy outright approximately 25 percent of our fruits and vegetables from the grower. Other produce is contracted with growers on various financial arrangements. In some cases, we advance finances for all costs of fertilizer, labor, insecticides, water, and other incidental costs, and often land rent is paid (by the producer). The profit or loss is divided equally between ourselves and our growers. In some instances, we act as the grower's agent and do not take title to the produce but will harvest, pack and sell the grower's crop for which an agreed fee is paid and the net proceeds of the sales are returned to the grower."[176]

This excerpt describes the joint account arrangement whereby the shipper and grower split all profits or losses above packing and marketing costs. This is a hybrid complete and incomplete exchange arrangement. Except for the cash purchase at shipping point it is the only other exchange arrangement in which the shipper shares the market risks of the product with the producer. It should not be assumed from the excerpt that all financing of producers by shippers occurs under these joint account arrangements; production financing just as often is associated with the incomplete exchange arrangement.

The economic implications of the shipping point incomplete exchange arrangement concern the secondary role given prices in the production

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[176]McAllen Hearings, p. 599.

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The economic implications of the shipping point incomplete exchange arrangement concern the secondary role given prices in the production

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[1] Moellen Letters, p. 29.

and harvesting process, the optimizing criteria for shipper marketing decisions, the forward orientation of shipping point firms, and the position of the producer as residual income claimant in the fresh fruit and vegetable marketing channel. These and the evidence gained from the hearing process for them are discussed in turn below.

An important question related to the role of farm prices with the incomplete exchange arrangement in allocating resources to the production, harvesting and marketing efforts when the renumeration for these is paid the grower after their performance. At the time the producer makes his production decisions he has only the variable historical estimates of prices on which to form an expectation. At the time the two principal marketing decisions are made, the timing and intensity of harvest and the choice of marketing agent, the producer still has only poor estimates of expected prices, somewhat better for those crops with stable price-quantity relations but exceedingly gross for crops whose prices are subject to rapid and wide price fluctuations during the harvest and marketing season.[177] With a complete exchange arrange-

[177] A distinction needs to be drawn here between farm prices as ex ante guides to resource allocation in production and as ex post evaluations of those allocation decisions. An expected price, the accuracy of which is affected by price stability, is an ex ante guide to resource allocation; prices resulting from that resource allocation, ex post prices, can be known with certainty and may become the guides to the next round of production processes. But the distinction sought is more than just a lag, although the lag itself particularly for long-term crops such as fruits is of considerable importance. The specificity of ex ante prices is greater than for ex post prices. Variable though prices may be they are a singular guide to resource allocation and historical price-quantity relations are of some aid in their prediction. But ex post prices are not the only performance criteria for the producer; performance may be measured by more than just prices received and considerably more affects prices than just prior resource allocation. For these reasons differences may persist over time in expected and received prices without resource adjustment, and the time at which the producer's price is determined is important to the role of price in production resource allocation.

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ment or a forward pricing system at the minimum the producer has a guaranteed price for the crop at the time of delivery to the marketing agent; often these also contribute to the rationalization of the planting decisions as well. But with the incomplete exchange arrangement the product price is not known for some time after the product is introduced into the marketing sector, and the marketing decisions of the producer suffer accordingly.[178]

By and large the Commission treated the indeterminatedness of price under incomplete exchange in terms of the exploitation of the production sector by the shipping point firms. That is unfortunate and often led to confusion since many producers testified they did not object to these exchange arrangements. The issue might better have been posed in terms of the role of price in such an indeterminate system and the resulting alternative mechanisms substituting for the directive role of price in market coordination and allocating production resources. For those producers operating with substitute directive mechanisms such as forward delivery contracts, there is no complaint with the shipping point market incomplete exchange arrangement. It is when a substitute for prices in the vertical coordination of production with the marketing sector is not available or desired that resource allocation under incomplete exchange becomes a problem.

The implications for price of an incomplete exchange arrangement were

178This is not justified by the fact that once the crop is produced harvest will continue as long as the variable harvesting costs exceed product prices. There are a number of adjustments in product supply and quality which could be made even though the harvest would not be limited for lack of a selling price. And in any event the abandonment decision cannot be rational unless the selling price is known. The errors in resource allocation from lack of price knowledge are additional costs to the competitive costs of lack of comparative prices on which the producer might choose between marketing agents.

ment or a forward pricing system at the minimum the producer has a guaranteed price for the crop at the time of delivery to the marketing agent; often these also contribute to the rationalization of the planning decisions as well. But with the incomplete exchange arrangement the product price is not known for some time after the product is introduced into the marketing sector, and the marketing decisions of the producer suffer accordingly.[178]

By and large the Commission treated the indeterminatedness of price under incomplete exchange in terms of the exploitation of the production sector by the shipping point firms. That is unfortunate and often led to confusion since many producers testified they did not object to these exchange arrangements. The issue might better have been posed in terms of the role of price in such an indeterminate system and the resulting alternative mechanisms substituting for the directive role of price in market coordination and allocating production resources. For those producers operating with substitute directive mechanisms such as forward delivery contracts, there is no complaint with the shipping point market incomplete exchange arrangement. It is when a substitute for prices in the vertical coordination of production with the marketing sector is not available or desired that resource allocation under incomplete exchange becomes a problem.

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[178] The implications for price of an incomplete exchange arrangement were This is not justified by the fact that once the crop is produced harvest will continue as long as the variable harvesting costs exceed product prices. There are a number of adjustments in product supply and quality which could be made even though the harvest would not be limited for lack of a selling price. And in any event the abandonment decision cannot be rational unless the selling price is known. The errors in resource allocation from lack of price knowledge are additional costs to the competitive costs of lack of comparative prices on which the producer might choose between marketing agents.

spelled out in the following testimony of a producer of vegetables in Texas:

> "Let me bring up another deal I had with lettuce. During the period of time that lettuce was bringing about $2.05 which ordinarily that would give $1.05 to the grower — they usually charge $1.00 pack-out. I thought I was getting this $1.05 which would be above my packing charges. I wound up getting about 35 or 40 cents. I know of one instance when the price of carrots already started up and they were packing them out. I might add that during this case I had sold half interest of my field to a shipper. It was difficult for me to find out whether I was getting the proper price. They said we will have to see what they are. I would ask if we were making (forward) firm sales. Well, yes we are making firm sales but we don't know what we can pay yet. That wasn't very clear to me. I don't know if it is to you."[179]

Another producer indicated:

> "Frequently in a pack-out situation, a grower never knows what he is getting for his produce after the first day. When a grower is being charged a set price (fee) for handling costs by the shipper, then he, the grower, should be entitled to the price the produce brings above this charge, unless other arrangements have been agreed upon."[180]

Enterprise combination and preferences often give rise to the shipping point incomplete exchange relation. Those producers not independently or cooperatively integrated into the shipping point marketing functions show a preference for delegating marketing responsibility and authority to other firms. Many accept the risks of these arrangements but acknowledge their relation to farm price instability as is indicated by the following exchange:

> Rep. May: Specifically, Mr. Chinn, what arrangement do you have with the shipper on lettuce and cabbage? Just what kind of definite arrangements are there? Do you just turn it over to the shipper entirely, or does the shipper simply handle it for you? How does that work out? I am not sure I understand.

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[179] McAllen Hearings, p. 325.

[180] Ibid., p. 316.

[illegible] on in the [illegible] beginning of a production of [illegible]

Dean:

> [illegible] as being [illegible] [illegible]. [illegible]
> the morning of this [illegible] [illegible] [illegible].
> which completely [illegible] [illegible] to the [illegible]
> they merely disagree. [illegible] [illegible]
> this [illegible] [illegible] [illegible] [illegible].
> us on [illegible] on [illegible]. [illegible] [illegible]
> when the [illegible] [illegible] [illegible] [illegible]
> possibly [illegible]. [illegible] [illegible] [illegible]
> sold [illegible] [illegible] [illegible]. [illegible]
> ould [illegible] [illegible] [illegible] [illegible]
> price. [illegible] [illegible] [illegible] [illegible].
> back if we were [illegible] (merely) [illegible]. [illegible]
> are leading [illegible] [illegible] [illegible] [illegible].
> that exactly were [illegible] [illegible] [illegible].

Another professor [illegible]:

> "[illegible] a [illegible] [illegible], a [illegible]
> what is [illegible] [illegible] [illegible] [illegible].
> [illegible] a [illegible] [illegible] [illegible] [illegible].
> [illegible] [illegible] [illegible], [illegible] [illegible],
> entitled to the [illegible] [illegible] [illegible],
> whose office [illegible] [illegible] [illegible]."[1]

enterprise coordination and [illegible] office rise to the

slight point [illegible] [illegible]. [illegible] [illegible]

[illegible] or [illegible] [illegible] [illegible] [illegible]

[illegible] show a [illegible] [illegible] [illegible]

authority to other [illegible]. [illegible] [illegible]

but authorized [illegible] [illegible] [illegible]

[illegible] by the following [illegible]:

> Dep. Mgr: [illegible], Mr. [illegible], what [illegible] do you have
> [illegible] a [illegible] on [illegible] and [illegible]?
> [illegible] [illegible] [illegible] [illegible]?
> [illegible] [illegible] [illegible], or [illegible]
> and [illegible] [illegible] [illegible]? [illegible]
> only. I do not [illegible].'

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[1]Hamilton Hearings, p. 328.

[2]Ibid., p. 214.

Mr. Chinn: In my operation, there are various ways of doing it. In my operation, I feel I am a farmer and I should stick to my farming. I feel that the harvest and the shipping and packaging and selling is another man's business. So I do the growing and when my crop is ready I will go to a shipper. You go back to the shipper and say, "Look, I am going to have 15 acres of lettuce ready next week. I want you to cut it, haul it into the shed here, package it and sell it for me at your regular market (price) of that day." That is about the agreement they make with you. There is no guarantee whatsoever that you are going to get back a statement showing a $1.00 price or a 15 cent price, or whatever it is. It is the price that they sell it for. The fact that it is sold that particular hour of that day makes the price. Your market could fluctuate from morning to the afternoon.[181]

To the extent growers show a preference for this form of enterprise combination at shipping point, there can be no quarrel with the shipper. But it can be noted that the same form of enterprise combination is consistent as well with a complete exchange arrangement; the enterprise combination itself, the fact that the producer wishes to specialize in production and delegate his marketing decisions to some other firm, is not a sufficient explanation for the existence of the incomplete exchange arrangement.

The period of time between harvest of the crop and the time at which the producer is appraised of his ex post price under an incomplete exchange arrangement varies. Some shippers can inform the producer of the price soon after taking possession of the crop, though final settlement may not take place until sometime later. Because marketing costs may vary over the season, the prevailing forward market prices may be a poor indicator of final farm prices. As the following dialogue points out, the producer may not know the price of his crop until after the season is completed:

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[181]San Francisco Hearings, p. 649.

Mr. Oliver: [illegible]

to the extent [illegible] a perseverance for this form of enquiry [illegible] explicit [illegible] point, there ought to be granted [illegible] [illegible] that it can be noted that the area for [illegible] conducive as well with a competitive [illegible] enquiry itself, the fact that the producer [illegible] production and delegate his marketing problems to [illegible], is not a sufficient motive for the existence of the Inquiry Into [illegible] area's work.

The period of time between harvest of the crop and the time at which the producer is apprised of his [illegible] price under [illegible] arrangement varies. Some slippage can [illegible] the producer may not take place until several [illegible] the price soon after taking possession of the crop, [illegible] [illegible] may very over the season, the possibility [illegible] a poor indicator of final farm price. As the following [illegible] points out, the producer may not know the price of his crop until after the season is completed:

[illegible] Report, p. 42.

Mr. Marshall: Let's see if I follow you. You are selling your carrots to a shipper. You have told him that you are going to sell him your carrots. Do you agree on a price at that time?

Mr. Jones: In some instances yes, and in some instances no. . . I believe you heard some testimony that said we will just do the best we can for you. If I have no other source of selling this produce, I can either take this sort of a deal or leave it. And sometimes they say (the shippers) we will do the best or figure out the best price, then I either take that one or I don't have a sale.

Mr. Marshall: How long a period of time does an average arrangement of this kind run approximately?

Mr. Jones: Sometimes it goes practically through the entire season. Maybe we are able to determine what we are getting and at times we are not.[182]

While it is true that serious resource misallocation in the production and harvesting decisions occurs so long as the producer does not know his price at the time of harvest, there are implications to price deferment beyond the harvest period as well. As noted previously many producers are paid an average price on a pooled arrangement; price deferment over the season moves the farm price of individual transactions closer to this average. Moreover price deferment until the product has entirely cleared the marketing channel is important for the incidence of market risk among producers and the marketing sector.

Two defences of the shipping point incomplete exchange arrangement are normally put forth by the shipping market sector and, often, growers. The first is that in approaching the shipping point exchange relation all production costs are sunken and harvest should continue so long as the farm price exceeds harvest cost; that is, the grower has no alternative but to continue the harvest process and marketing so

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[182]McAllen Hearings, p. 324.

Mr. Marshall: Let's see if I follow you. You are telling your customers to a dollar. Then you told Mr. Wyer you are going to sell it a penny cheaper. Is your cross on a price at that it of

Mr. Jones: In some instances yes, and in some instances no. . . I believe you heard some testimony that said we will just do the best we can for you. If I have no other source of selling this product, I can either take this sort of a deal or leave it. And sometimes they say (the shippers) we will do the best we always can the best price, then I either take that one or I don't have a sale.

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Two defenses of the shipping point throughput exchange arrangement are normally put forth by the shipping market sector and, other, growers. The first is that in appreciation the shipping point exchange relation all production costs are swollen and harvest should continue so long as the farm price exceeds harvest cost; that is, the grower has no alternative but to continue the harvest process and marketing so

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[1] Hamilton Hearings, p. 284.

there is no need for a directive pricing mechanism. Since profit-conscious producers would never purposely extend output to this break-even point, where crop abandonment becomes rational, this corrective limit would never operate if some forward pricing system were to replace the incomplete exchange. In addition the arguement neglects other short-run adjustments which the producer can make to farm prices if known in advance. Finally, the arguement assumes an unlikely symmetry of the ex ante and ex post roles of price in the short-run and long-run decisions affecting industry resource allocation.

The second defense of these exchange arrangements is that either the producer can find a shipper who will purchase the crop for cash at or before harvest or that they are competitive arrangements with the complete exchange terms. The second is the more compelling argument. As for the former, it will be seen in the following section dealing with producer financing by shippers that incomplete exchange arrangements often exist simultaneously in the same markets for long periods of time not enforced by tieing arrangements such as financing.[183] Where this occurs it appears that, reflecting grower preferences and the risk incidence of incomplete exchange, favored relations may involve cash purchases but these are limited and the remainder of relations are of the incomplete type.

Sales Versus Profit Maximizing Market Behavior. A second problem of the incomplete exchange arrangements at shipping point as brought out

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[183]The most common example of this co-existence is that of the cooperative and the cash-buying shipper. In this instance, of course, there are pecuniary and non-pecuniary reasons for their joint existence.

there is no need for a theoretic predictive procedure. Since profit-conscious producers would never purposely cultivate output to this precise point, where crop diminishment becomes maximal, this corrective limit would never operate if some forward pricing system were to replace the incomplete exchange. In addition the argument neglects other short-run adjustments which the producer can make to farm prices if known in advance. Finally, the argument assumes an unlikely symmetry of the ex ante and ex post modes of price in the short-run and long-run deciders affecting industry resource allocation.

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Sales versus Profit Participating Market Elevator. A second problem of the incomplete exclusive arrangements at shipping point as from it o

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[13]The most common example of this co-existence is that of the cooperative and the cash-buying shipper. In this instance, of course, there are peculiarly non-pecuniary reasons for their joint existence.

in the Commission's hearing process relates to the economic motivation of the shipper. If the marketing sector consisting of shippers and brokers is compensated in the form of fixed charges per unit of marketing service without assuming the risks of product ownership, then the economic relationship between profits and prices is severed. These firms are paid for their services regardless of the selling price of the crop. Under these circumstances, when a market sector has a guaranteed return per unit yet is responsible for a number of marketing decisions affecting the selling price of the crop, there may develop market conflicts between buyers and sellers.[184] More specifically, in addition to its influence on vertical market coordination, a sales maximizing shipping point market sector has the following implications for the stability of farm prices: (1) shippers may encourage excess productive capacity through contracts and financing; (2) greater supplies may be harvested and marketed than are justified by the farm price-harvest cost relation; (3) the responsiveness of the shipping

[184]While the following emphasizes an industry conflict between sales and profit maximization, it is not intended to imply that shippers would be rational profit maximizers under more normal compensatory arrangements. There is no evidence of this. What is intended is that the institution of incomplete exchange permits shippers to maximize volume or sales, with appropriate profit constraints, with no sacrifice to profit as would occur with such behavior if the shipper took title to the product from the producer. Nor are the economic motivations of producers accurately described by the sales-profit maximization dichotomy. Thus, I wish to distinguish between degrees of economic motivation, not kinds. The economic conflict is a problem of interest and incentive; the result is an inconsistency of producer and shipping point profit maximizing output and price levels. The conflict was very clearly stated by a producer of fresh vegetables: "This (incomplete exchange) is only partially successful. When a shipper is receiving a certain price per bag to handle the crop, he is inclined to try to move a large volume and not have my interests in mind." McAllen Hearings, p. 355.

price-harvest cost relation; (2) the responsiveness of the elasticity

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[1]While the following discussion emphasizes an industry consisting between sales and profit maximization, it is not intended to imply that shippers would be rational profit maximizers under normal competitive arrangements. There is no evidence of this. What is intended is that the distribution of income between producers provides shippers to maximize volume or sales, with approximate profit constraints, with no sacrifice to profit as would occur with such behavior if the shipper took title to the product from the producer. The economic motivations of producers accurately described by the sales-profit maximization dichotomy. Thus, I deal to distinguish between degrees of economic motivation, not kinds. "In economic conflict is a problem of interest and income; the rise in income-frequency of producer and shipper point profit trade-off-put and price levels. The conflict was very clearly stated by a producer of fresh vegetables: "Data (unobjective evidence) is only partially accessible. After a shipper is receiving a certain price per box to handle the crop, he is inclined to try to move a large volume and not have my interests in mind." Heflin Hearings, p. 215.

point market sector to changes in channel prices and costs is reduced or destroyed; and (4) there is an incentive for shippers to oppose or undermine producer control of total supply and flow to market.

Because this market conflict is associated with the incomplete exchange arrangement and must be resolved in some manner in the case of the individually or cooperatively integrated grower-shipper, it was found more often in South Texas, where there is less cooperative and grower-shipper integration, than in California and Washington. While the lines of conflict may not be as clear in these areas with extensive grower-shipper operations and cooperative activity, there is reason to believe the problem is prevalent throughout the country. The simultaneous relationship of incomplete exchange, market risk and this market conflict is best illustrated by the following dialogue:

Mr. Marshall: Mr. Frost, you mention consignment marketing. Is my understanding of consignment marketing correct that a grower may enter into an agreement with a shipper and not pass title to that crop?

Mr. Frost: Yes, sir. I believe that is the way it works. The shipper has the product but if there is a loss on the product, it comes back to the producer.

Mr. Marshall: For how long a period of time would this ownership be in the hands of the shipper before the title would be passed?

Mr. Frost: I would guess until he has sold it to a broker-buyer on the other end. The shipper comes out and harvests your product and he makes a settlement later. If there has been a loss incurred either in the packing or harvesting cost, he will still get his cost back before the grower gets anything. If the harvesting and packing costs are more than the return, then the grower is generally given a bill. A lot of times, the shipper will call it even but in many cases the grower is given a bill.

Mr. Marshall: Why do you feel this type of selling is of a disadvantage to the grower?

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Mr. Marshall: Mr. Frost, your position cannot exist much longer. Is my understanding of casual trade therefore correct that a grower may enter into an agreement with a shipper and not pass title to that crop?

Mr. Frost: Yes, sir. I believe that is the way it works. The shipper has the product but if there is a loss on the product, it comes back to the producer.

Mr. Marshall: For how long a period of time would this ownership be in the hands of the shipper before the title would be passed?

Mr. Frost: I would guess until he has sold it to a broker-buyer on the other end. The shipper comes out and harvests your product and he makes a settlement later. If there has been a loss incurred either in the packing or harvesting cost, he will get his cost back before the grower gets anything. If the harvesting and packing cost's are more than the return, then the grower is normally given a bill. A lot of times, the shipper will call it even but in many cases the grower is given a bill.

Mr. Marshall: Why do you feel this type of selling is of a disadvantage to the grower?

Mr. Frost: The shipper is not taking any risk. In other words, for instance, take our tomato deal down here which is just about a (total) consignment deal. If a shipper has two carloads of tomatoes setting on the loading platform around his shed, if he can't get a nickle, everybody in the Valley will cut the price to four cents. If he had his money in these tomatoes rather than the grower's investment, he is not going to cut the price near as fast.

Mr. Marshall: Do you think there is a tendency on the part of the shipper to use (consignment marketing) as a means of holding prices down to other growers in the area?

Mr. Frost: I don't think it is done intentionally to hold price down. I think we have enough shippers that are all competitive with each other. When they are hauling my produce and my neighbor's produce, they can cut the price and it doesn't hurt them; it hurts me.[185]

The situation described has the appearance of a lack of price competition among shippers, but it clearly has its origin in the exchange institution. Mr. Frost's evaluation of the competitive check on shipper pricing policy of course refers to the similarity of treatment given producers by shippers and competition in forward shipping point markets, not to the economically competitive result. Nor does he refer to competition as the word is used in the vernacular of the trade, for he clearly sees that the competitive result is not to his advantage. And this is one of the characteristics of an institutionally-based market conflict — they are not vulnerable to competitive checks consisting of entry and large numbers of firms.

Most witnesses associated the origin of this market conflict with the exchange arrangement. For example, a vegetable producer in Texas put it this way:

Mr. Raitt: Mr. Schuster. . . Is it your contention that shippers who handle crops on the grower's account do not have

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[185]McAllen Hearings, p. 245.

Mr. Frost: The shipper is not taking any risk. In other words, the interests, take our trade and don't have it back, I'm afraid a (local) consignee has two certificate of inspections written on the loading platform around his neck, if he can't get a price, immediately in the Valley will cut the price to four cents. If he had his money in three to four weeks rather than two month's in advance, he is not going to cut the price near as fast.

Mr. Marshall: Do you think there is a tendency on the part of the shipper to use (consumption inducing) as a means of holding prices down to color prices in this area?

Mr. Frost: I don't think it is done intentionally to hold prices down. I think we have enough shippers that are all competitive with each other. When they are heavily producer and my neighbor's produce, they can peg the price and it doesn't pay him ; it hurts me.[1]

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Mr. Hallt: Mr. Chairman. . . Is it your contention that shippers who handle crops on the grower's account do not have

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[1] "Hearings," p. 245.

> the incentive to get the highest price for the crops which they handle?

Mr. Schuster: Let me put it this way. If a car dealer here in town would put every one of his salesmen on the basis of $50 a car for every car they could sell, practically an unlimited number, without their talking about price, would the salesmen be willing to forego even one sale because of price?[186]

This analogy while correct in principal is too strong. There are long-run checks such as cooperative integration and the loss of producer accounts which prevent shippers from entirely ignoring price. But the short-run reasons for doing so are compelling. Other witnesses associated the weak seller hypothesis with the incomplete exchange arrangement:

> ". . .if one thing could be pointed out as having caused depressed prices to farmers in this area, it would be consignment marketing. When a grower gives his produce to the shipper to be handled as the shipper sees fit, he has placed himself at the mercy of the shipper. There are many shippers in this area for each commodity and it usually takes only one of them cutting the price to force the whole market down. He (the shipper) will still make his profit and the farmer just gets a little less; or has happened quite often, the farmers get a bill because there was a loss incurred after the expenses were deducted."[187]

And still other producers failed to associate the exchange arrangement with the market conflict and were sympathetic to the shippers' position. According to one producer:

> "The shippers have no quarrel with me. In fact, they are looking for products to ship. As long as they are not shipping, they are not making any money either. In fact, if I have any argument with shippers, it is to keep continuously shipping causing the market sometimes to drop. They work on a percentage, which they are entitled to, and if they are not shipping, if the packing plant is closed down today, they are

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[186] McAllen Hearings, p. 170

[187] Ibid., p. 230.

the three fairs to get the highest price for their cotton.
...ldish Cotton Journal.

V. Dollwater: Let me put it this way. If a car dealer has in
town useful and average use of his dollar to do his
thing of [illegible] car dealership with his
personality on well if he does, which is in
fact why a car prices, would the salesman [illegible]
to forego even one sale because of price?

This analogy while correct in principal is too strong. There are long-run checks such as competitive entry which prevent slippers from entirely depressing prices. But the short-run reasons for doctors to are compelling. Other firms- sea associated the weak selling hypothesis with the incomplete evidence arrangement:

". . . if one thing could be predicted as best by economic prudence to [illegible] era, it would be consolidation [illegible] better. Here a group of [illegible] like placed himself at the [illegible] as the slipper sets [illegible], he has placed himself at the mercy of the slipper. There are many slippers in this area for each commodity and it usually takes only one of them getting the price to [illegible] the whole market down. He (the slipper) will shift [illegible] and the farmer just sees a little less; or has temporal gripe often, his farmers [illegible] a bill because [illegible] a loss incurred after the expenses were deducted."

And still other producers failed to reconcile the exchange arrangements with the market conflict and were sympathetic to the slippers' position. According to one producer:

"The slippers have no quarrel with me. In fact, they are looking for products to ship. As long as they are not shipping, if the packing plant is closed down today, they are a percentage, which they are entitled to, and if they are not shipping carrying the market some loss to them. They work on have any argument with shipping. It is to keep continuously [illegible] a car, if I ship, they are not making any money either. In fact, if

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[illegible] Hearings, p. 170

[illegible], p. 230.

not going to make any money either."[188]

One manifestation of this marketing conflict is the frequent call for centralized, grower-dominated shipping point marketing institutions. These would not necessarily eliminate the incomplete exchange at shipping point, but they would change the performance of the exchange. The growth of marketing cooperatives may be traced in part to the desire of producers to maintain control of crop marketing and coordinate this marketing with the production efforts in view of the present conflict between the output and pricing goals of the production and marketing sector. Marketing associations and central sales agencies may also serve these purposes, as suggested by the grower in the following excerpt:

> "There is a definite need for a marketing association and a central sales agency. The farmer needs to keep title and control of his crop until it reaches the buyer. Under the present system, a shipper wants to handle the crop. He receives a packing charge for his efforts but (sometimes) takes title to the commodity and undercuts his competitors in order to keep a big volume going. Marketing associations can plan their plantings and avoid a lot of marketing gluts and keep a more uniform flow of produce to the market."[189]

There is no clear evidence that such associations where they exist receive this enthusiastic support of growers nor that they are this effective in avoiding marketing surplus and improving flow to market. Nevertheless the felt need for them is indicative of the perceived conflict between the output and pricing levels of the shipping point and production market sectors. There are differences of opinion on the kind of mechanism best suited for the purpose, but the need for alternative means of vertical coordination between these two market

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[188]San Francisco, Hearings, p. 657.

[189]McAllen Hearings, p. 377.

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One manifestation of this marketing conflict is the frequent call for centralized, government-mandated shipping point marketing institutions. These would not necessarily eliminate the brokerage exchange at shipping point, but they would change the performance of the exchange. The growth of marketing cooperatives may be traced in part to the desire of producers to maintain control of crop marketing and coordinate this marketing with the production efforts in view of the present conflict between the output and pricing goals of the production and marketing sector. Marketing associations and central sales agencies may also serve these purposes, as suggested by the answer in the following excerpt:

> "There is a definite need for a marketing association and a central sales agency. The farmer needs to keep title and control of his crop until it reaches the buyer. Under the present system, a middleman wants to handle the crop. He receives a packing charge for his efforts but (sometimes) takes title to the commodity and undersells his competitors in order to keep a big volume going. Marketing associations can plan their plantings and avoid a lot of marketing chaos and keep a more uniform flow of produce to the market."[168]

There is no clear evidence that such associations were they exist receive this enthusiastic support of producers nor that they are this effective in avoiding marketing surplus and improving flow to market. Nevertheless the felt need for them is indicative of the perceived conflict between the output and pricing levels of the shipping point and production market sectors. There are differences of opinion on the kind of mechanism best suited for the purpose, but the need for alternative means of vertical coordination between these two market

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[168]San Francisco Examiner, p. 657.

[167]McAllen Hearings, p. 277.

sectors is not in question.

In addition to how the conflict shall be resolved, whether by a vertical compromise of producer and shipper economic goals or by more formal integrated structures, at issue here is whether the performance of the incomplete exchange arrangement is competitively acceptable to producers. This problem is illustrated by the testimony of a Northwest fruit industry representative:

Rep. Sullivan: Is it correct for one to assume that fruit shippers are paid a fee for packing, shipping and selling the grower's produce even though that fruit is ultimately sold at a loss to the grower?

Mr. Stadelman: Yes; that is correct. It does not make much difference whether it is done in the cooperative or by a (private) shipper. The fee charged -- and I think this applies generally -- is an amount that shows the effect of the deterioration on the (shipper's packing) equipment. The individual is charged with the individual amount that it costs to run his fruit. It is true we peel things very closely when bad years come along.

Rep. Sullivan: Is it true a shipper may show a profit even when the grower shows a loss?

Mr. Stadelman: That is right.

Rep. Sullivan: Do you feel those who do not have a vested interest in a product are generally strong sellers?

Mr. Stadelman: Yes, I think so because the competition is very stiff and most of these people have an interest in the fruit from a growing standpoint, too.

Rep. Sullivan: What assurance has the ordinary grower who sells to a shipper on grower's account that the shipper will try to get the top dollar for his produce?

Mr. Stadelman: He hasn't any definite assurance or guarantee that he will. The only thing is from a competitive standpoint there are many shippers and they are all after the business and, believe me, if your prices are not competitive, not only with other shippers, but with cooperatives, you will

sections is not in question.

In addition to how the conflict shall be resolved, whether by a vertical composition of producer and shipper economic goals or by more formal integrated structures, at issue here is whether the performance of the incomplete exclusive arrangements is economically acceptable to producers. This problem is illustrated by the testimony of a Northwest fruit industry representative:

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Rep. Sullivan: Is it true a shipper may show a profit even when the grower shows a loss?

Mr. Stadelman: That is right.

Rep. Sullivan: Do you feel those who do not have a vested interest in a product are generally short sellers?

Mr. Stadelman: Yes, I think so because the competition is very stiff and most of those people have an interest in the fruit from a growing standpoint, too.

Rep. Sullivan: What assurance has the small grower who sells to a shipper on grower's account that the shipper will try to get the top dollar for his produce?

Mr. Stadelman: He hasn't any definite assurance or guarantee that he will. The only thing is from a competitive standpoint there are many shippers and they are all after the business and, believe me, if your prices are not competitive, not only with other shippers, but with cooperatives, you will

soon be out of business.[190]

The argument that shippers will be competitive in factor markets because many are integrated into those markets has some merit and will be taken up later in this chapter. That argument notwithstanding, Mr. Stadelman's emphasis on the competitive result following regardless of the incomplete exchange arrangement is not entirely convincing. There does not seem to be any more reason to expect shippers to substitute complete exchange arrangements for incomplete arrangements or otherwise settle the producer price earlier than is currently the case than there is to expect them to fail to recognize their mutual interdependence in factor markets and as a group maintain those exchange arrangements best insulating them from market risk. And the position that sales maximization encourages more intensive shipper competition in factor markets than would be the case under other exchange arrangements overlooks the fact that this competition is channeled into such areas as grower contracts and financing and does not appear to be based on the exchange relation.

Whether confidence is placed in competition between shippers for supplies to make the shipping point marketing sector responsive to the interests of producers or whether some compromise output and pricing levels are reached between growers and shippers through a form of integration, the problem of market conflict will still exist for a large number of uncommitted producers of fresh fruits and vegetables.

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[190] Seattle Hearings, p. 188. The testimony that producers may suffer a net loss on product after packing and marketing is merely an indictment of the directive role of price at harvest time. If the marketing costs and prices were known before the product was introduced into the market process, the product would not have been harvested.

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Whether confidence is placed in competition between shippers for supplies to make the shipping point marketing sector responsive to the interests of producers or whether some compromise output and pricing levels are reached between growers and shippers through a form of integration, the problem of market conflict will exist for a large number of unscrupulous producers of fresh fruits and vegetables.

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[129]Seattle Hearings, p. 114. The testimony that producers may suffer a net loss on product after packing and marketing is merely an indictment of the dispersive role of price at harvest time. If the marketing costs and prices were known before the product was introduced into the market process, the product would not have been harvested.

With the incomplete exchange the shippers not only can divest themselves of the risks involved in marketing these perishable crops but also insure a return presumably adequate to cover their costs and profits.

The forward market orientation of the shipping point marketing firms is closely related to the incomplete exchange and divergences in economic goals of producers and the initial market sector. The Commission's finding that shipper marketing behavior may be more oriented to buyers, chainstore organizations, affiliates, and retail cooperatives, than to their grower-clients is predicated upon the lack of product ownership just as much as the larger sizes of buyers. This forward orientation of shippers may infrequently take the form of passivity to predatory or quasi-predatory buyer practices as the Commission felt. But more importantly for purposes here it, along with the factor market incomplete exchange of shippers, makes these firms neutral to market disturbances originating further along in the channel. As the focal point for a number of growers' marketing efforts, the shipping point firm is in an excellent position to insure marketing decisions promoting the greatest market stability. But the incentive is lacking and marketing disturbances are reflected through the shipper to the producer who is in less of a position to correct these disturbances.

The passive role of the shipper in forward markets was criticized by one producer as follows:

Rep. Purcell: Do you feel that there are plenty of shippers of this category available to furnish competition between each other?

Mr. Chinn: I think so; yes, sir.

Mr. Ohlen: I think so; yes, sir.

Rep. Purcell: Do you feel that there are plenty of shipping
of this nature available to furnish competition
being a good object?

to the producer who is in less of a position to correct these disturbances.

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> conditions promoting the greatest market stability. But the incentive
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> to the producer who is in less of a position to correct these disturb-
> ances.
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> The passive role of the shipper in forward markets was certi-
> fied by one producer as follows:

Rep. Purcell: But they are all just offering the same low price?

Mr. Chinn: They don't name the price. The buyers are the ones who will name the price.[191]

There are two principal kinds of marketing decisions over which the shipper is given control upon handling a crop for a grower: the decision to ship to a wholesale or retail market and the terms of trade under which to ship.[192] It would be expected the shipper would allocate the crop among the markets and choose the terms of trade in a manner according with his own economic objectives. Since retailers purchase only as needed and only for their own firm use, the wholesale consigned market, another incomplete exchange relation, is the most likely candidate to absorb those market supplies generated by the shippers' emphasis on sales volume. The following dialogue demonstrates that the consignment wholesale market is used more extensively in periods of surplus and has a destabilizing effect on the other market alternatives:

Rep. Purcell: Actually, would it be true that when anybody is selling on consignment. . .does this not have a depressing effect on the market for cash or whatever other kind of payment you are getting for the crop?

Mr. Van De Walle: It indicates a surplus in the eyes of the growers. The grower thinks he has a commodity that has no sale so he is offering it to anybody to get what you can for him out of it.

Rep. Purcell: I understand that, but the effect of it would be to lessen the hustle of the fellow on the other end to go out and buy on a competitive basis, would it not?

Mr. Van De Walle: It would. This is what I call the weak seller and it has a tendency to establish the market

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[191] San Francisco Hearings, p. 646.

[192] These are discussed in detail in Chapter 3.

Rep. Purcell: But they are all just offering the same product

Mr. Quinn: They don't name the price. The buyers are the ones who will name the price.--21

There are two principal kinds of marketing flexibility over which the shipper is given control when handling a crop for a customer. The decision to ship to a wholesale or retail market and the terms of trade under which to ship.[22] It would be expected the shipper will allocate the crop among the markets and choose the terms of trade in a manner according with his own economic objectives. Since retailers purchase only as needed and only for their own use, the wholesale commitment market, another interruptible marketing relation, is the most likely candidate to study those market supplies commanded by the shippers' emphasis on sales with c. The following dialogue demonstrates that the contingent nature of profit's market is used more extensively in periods of surplus and has a destabilizing effect on the other market alternatives:

Rep. Purcell: Actually, would it be true that when anybody is selling on cereal rent. . . does this not have a depressing effect on the market for cash or whatever other kind of purchase it you are getting for the crop?

Mr. Van De Walle: It indicates a surplus in the eyes of the growers. The producer thinks he has a commodity that has no sale so he is offering it to anybody to get what you can for him out of it.

Rep. Purcell: I understand that, but the effect of it would be to lessen the buying of the fellow on the other end to go out and buy on a competitive basis, would it not?

Mr. Van De Walle: It would. This is what I call the weak seller and it has a tendency to establish the market

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[21]Dean Fredrickson Hearings, p. 44.

[22]These are discussed in detail in Chapter 3.

as a result of that.[193]

The Residual Income Claimant Position. To this point the shipping point incomplete exchange arrangement has been associated with four economic effects: (1) a reduction in the information available to the producer concerning market prices and the relative desirability of his harvesting and marketing alternatives; (2) a conflict in the pricing and output levels sought by producers and shippers; (3) a shifting of shipper orientation, at least in part, to his forward markets and away from his factor markets even though the shipper still serves as the grower's marketing agent; and (4) a transparency in the producer-first handler relations whereby market disturbances are transmitted through the shipper to the producer without affecting the shipper's costs and profits. It will be argued in this section the net effect of these in combination is to expose the production sector to a market instability which it is in the least advantageous position to correct, and that the costs of market instability accruing to the production sector fall on that sector because of the institutional arrangements of the market. The economic position of the producer in these circumstances will be referred to as the residual income claimant position.

The simplest test of the residual income claimant hypothesis is an examination of the treatment of short-run increases in marketing costs by the industry. If evidence can be gathered that increased costs not resulting from the trading of market functions between the production and marketing sector are borne by the producer instead of

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[193]McAllen Hearings, p. 287.

as a result of this.[1]

The Residual Income Claimant Hypothesis. To this point the shipping point incomplete enhancement argument has been reconsidered with three economic effects: (1) a reduction in the information available to the producer concerning market prices and the relative profitability of his harvesting and marketing alternatives; (2) a conflict in the pricing and output levels sought by producers and shippers; (3) a shifting of shipper orientation, at least in part, to its foreign markets and away from its factor markets even though the shipper might serve as the grower's marketing agent; and (4) a discrepancy in the producer-first banker relations whereby normal disturbances are transmitted through the shipper to the producer without affecting the shipper's costs and profits. It will be argued in this section the net effect of these in combination is to expose the production sector to a market instability which is in the least advantageous position to correct, and that the costs of market instability according to the production sector fall on that sector because of the institutional arrangements of the market. The economic position of the producer in these circumstances will be referred to as the residual income claimant position.

The simplest test of the residual income claimant hypothesis is an examination of the treatment of short-run increases in marketing costs by the industry. If evidence can be gathered that increased costs not resulting from the bundling of market functions between the production and marketing sector are borne by the producer instead of

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[1]Hamilton Beazley, p. 247.

forward markets and consumers, this will be suggestive of the transparency of the industry exchange relations and also the probable affects of short-term price fluctuations. But the observed cost incidence and fluctuations will not indicate who should bear these.

The evidence presented earlier suggested that increases in marketing costs have exceeded the rise in the marketing margin since 1958. Marketing cost increases have been rising fastest for the shipping point marketing functions, labor, packing materials, and transportation. Data in Table 14, provided by a shipper of fresh vegetables, indicates these cost increases over the 1941-65 period. For these crops marketing costs averaged a 67 percent increase in the post-war period, an 11 percent increase over the 1959-65 period. Accompanying these cost increases, according to one Texas shipper, has been a situation where "We have been unable to increase our selling prices to keep pace with our increased packing costs and therefore this has had to come out of the growers' return and the shippers' margin."[194]

Considering the service nature of the shipping point market and the large variations of enterprise combination as well as the number of integrated production-marketing structures, there is no compelling reason for any one particular division of marketing costs to develop between the production and shipping point market sector. Wide variation could be expected in cost incidence among the various shipping point markets and crops. However the evidence gained from the hearings and from shipping point firms is that producers are bearing the entire increases in marketing costs at least in the short run. The following exchange with a shipper in Texas is instructive in this respect and

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[194]McAllen Hearings, p. 606.

exchange with a shipper in Texas is instructive in this respect as it increases in marketing cost as at least in the short run. The following and from shipping point firms is that processors are bearing the entire point marketing cost increases have been slightly reduced from the beginning of the year. Marketing functions, labor, packing materials, and transportation data in Table 14, provided by a shipper of fresh vegetables, indicates these cost increases over the 1945-47 period. For these crops marketing costs averaged a 6% percent increase in the post-war period, as compared to a 5% percent increase over the 1935-39 period. Increases, according to one Texas shipper, has been a situation of "We have been unable to increase our selling prices to keep pace with our increased packing costs and therefore this has led to more cuts of the growers' return and the shippers' margin."[14]

Considering the service nature of the shipping point research and the large variations of enterprise combination as well as the number of integrated production-marketing alignments, there is no conceptually reason for any one price-factor division of marketing costs to develop between the production and shipping point marketing sector. Marketing costs could be expected in some industries among the various shipping point markets and crops. However the evidence gained from the research and from shipping point firms is that processors are bearing the entire effects of short-term price fluctuations. Individual marketing costs tend to remain relatively constant. Thus the marketing margin tends to increase and fluctuations will not influence to a great degree.

The evidence presented earlier may have led investors to presume that packing costs have crowded the rise in the marketing margin since 1939. Marketing cost increases have been slightly lagged for the shipping point marketing functions, labor, packing materials, and transportation data in Table 14, provided by a shipper of fresh vegetables, indicates these cost increases over the 1945-47 period. For these crops marketing costs averaged a 6% percent increase in the post-war period, as compared to a 5% percent increase over the 1935-39 period. However these cost increases, according to one Texas shipper, has been a situation of "We have been unable to increase our selling prices to keep pace with our increased packing costs and therefore this has led to more cuts of the growers' return and the shippers' margin."[14]

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[14] Hamilton Hearn, p. 606.

Table 14. Harvest, Packing and Shipping Costs of Selected South Texas Fresh Vegetables, 1941-65.

Season	Crops		
	Beets (½ crt. 3s)	Cabbage (50# bag)	Parsley (5s)
	dollar costs[1]		
1941-42	.62	.39	.63
1944-45	.86	.44	.96
1947-48	1.06	.59	1.01
1950-51	1.23	.66	1.20
1959-60	1.51	.97	1.45
1964-65	1.68	1.05	1.64
percentage change			
1947-59	42	64	43
1960-65	11	8	13
1947-65	58	77	62

[1]Includes brokerage fees.

Source: National Commission on Food Marketing, McAllen, Texas Hearing, June 11-12, 1965, original transcript, p. 585.

Table 14. Harvest, Yield and Planting Dates of Selected North Texas Irish Varieties, 1941-65.

Season	Yield ($\frac{1}{2}$ crt. Ba)	Date of Planting (Mar. Ba.)	Date Harvested (Ba.)
	---------- Dollar amount[1] ----------		
1941-42	.62	.17	.63
1944-45	.66	.14	.76
1947-48	1.06	.57	1.01
1950-51	1.23	.69	1.20
1959-60	1.71	.77	1.45
1964-65	1.64	1.05	1.64
percentage change			
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[1]Indicates purchasing power.

Source: National Conference on Food Marketing, McAllen, Texas Meeting, June 11-12, 1966, original transcript, p. 515.

links the incomplete exchange arrangement to this problem:

Rep. Purcell: As a general situation, Mr. Couch, are you as a packer being called on through the years to do more packaging and more getting the product ready for the retailer? As an industry, have you been able to pass these added costs on to the person or organization to whom you are selling?

Mr. Couch: No, sir.

Rep. Purcell: You have to absorb that?

Mr. Couch: We try not to absorb it. We try to pass it back on to the farmer who in the final analysis pays for it.

Rep. Purcell: There is nowhere else he can pass it?

Mr. Couch: No, sir. He is at the end of the rope.

Rep. Purcell: Is this the practice in the industry, so far as you know?

Mr. Couch: I think so. They (the growers) know what our costs are; we sell it as high as we can and we price (to the growers) accordingly.

Rep. Purcell: As a general rule, then, you have tried to figure in a reasonable profit for the service you render and then buy cheap enough or sell high enough to protect your profit, if at all possible?

Mr. Couch: That is right. We try to figure our cost with a profit. The actual cost is so much, depending on our supplies, whether we can make a dime or quarter or whatever it is, and then buy from the grower accordingly.[195]

For purposes here the position of the producer described by Mr. Couch is more interesting for the stability of producer prices than for their level. If the shipper can pass these cost increases back to the producer, the same direction may be assumed for short-term market disturbances resulting from three of the four market conflicts described previously: market surpluses resulting from the sales levels desired by shippers, concessions granted buyers by shippers,

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[195] Ibid., p. 589.

links the incomplete exchange arrangement to this problem:

Rep. Purcell: As a general situation, Mr. Couch, are you as a grower being called on through the years to do more producing and more cutting the price just for the record? As an industry, have you been able to pass these added costs on to the person or organization to whom you are selling?

Mr. Couch: No, sir.

Rep. Purcell: You have to absorb it?

Mr. Couch: We try not to absorb it. We try to pass it back on to the farmer who in the final analysis pays for it.

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Mr. Couch: That is right. We try to figure our cost with a profit. The actual cost is so much, depending on our supplies, whether we can make a crop or produce or whatever it is, and then buy from the grower accordingly.[129]

For purposes here the position of the producer described by Mr. Couch is more interesting for the stability of producer prices than for their level. If the shipper can pass these cost increases back to the producer, the same direction may be assured for short-term market disturbances resulting from three of the four market conflicts described previously: market surpluses resulting from the sales levels desired by shippers, concessions granted buyers by shippers,

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[129] Ibid., p. 529.

and, to be mentioned later, retail variable price merchandising. Although ultimately the problem is one of an atomistic producer sector facing a less than purely competitive marketing sector, at the heart of this transparency of the producer-first handler relation is the incomplete exchange arrangement; the manifestation of the problem is a producer price which is merely the residual product value after all marketing agents have extracted full-cost margins. And as a residual the farm price is highly unstable reflecting not only unexpected changes in supplies but also stability induced by the organization and behavior of the fresh fruit and vegetable marketing sector.

The producers' position in the marketing channel is again illustrated by a surprised counsel in the following exchange:

Mr. Raitt: On the costs of these new marketing services you are performing at the shipping level, are you being able to recover all of these costs that you are incurring in performing these services (grading, packing, etc.) or do you find that in the prices you are passing on along the line you cannot recover all your costs for all of these new things that you are required to do?

Mr. Van De Walle: They are added costs and they are reflected back to the grower.

Mr. Raitt: You mean these added costs are being taken off the growers' end rather than being added at the other end (the shipping point selling market)?

Mr. Van De Walle: These are all added costs to the cost of that carlot and if the carlot is $30 a ton in the area and it costs $20 a ton to do all of this processing then the net return to the farmer is $10.

Mr. Raitt: Shouldn't these costs be added to the product and passed on along the line and ultimately be paid by the consumer?

Mr. Van De Walle: There is a lot of coordinating we have to do and we all have to take a long look at the economy. The vegetable grower has carried a tremendous burden in shouldering his share of the economy up to now but it will all be our loss unless

and, to be mentioned later, retail vegetable price reduction. Although ultimately the problem is one of an adequate producer return facing a less than purely competitive marketing sector. On the basis of this transparency of the producer-final buyer relation in the incomplete exchange structure; the rationalization of the price a producer price which is merely the residual product value after all marketing agents have extracted full-cost margins. And as a residual the farm price is highly unstable reflecting not only unexpected changes in supplies but also stability induced by the organization and behavior of the fresh fruit and vegetable marketing sector.

The producers' position in the marketing channel is again illustrated by a surprised counsel in the following exchange:

Mr. Raitt: On the costs of these new marketing services you are performing at the shipping level, are you being able to recover all of these costs that you are incurring in performing these services (grading, packing, etc.) or do you find that in the prices you are packing on along the line you cannot recover all your costs for all of these new things that you are required to do?

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Mr. Van De Walle: There are all added costs to the cost of that carlot and if the carlot is $30 a ton in the area and it costs $10 a ton to do all of this processing then the net return to the farmer is $20.

Mr. Raitt: Shouldn't these costs be added to the product and passed on along the line and ultimately be paid by the consumer?

Mr. Van De Walle: There is a lot of coordinating we have to do and we all have to take a long look at the economy. The vegetable grower has carried a tremendous burden in absorbing his share of the economy up to now but it will all be our loss unless

something is done to make it equitable.[196]

In fairness, Mr. Van De Walle apparently did not understand the line of questioning, even to the point that he did not see the obvious conclusion to be drawn from his answers. His final statement is less an evasion than curiosity that such an obvious question would be asked. But the mechanics of the process he describes perfectly well illustrate the residual claimant position of the producer.

It is sometimes suggested the fact that the producer bears the incidence of the increased marketing costs is evidence these are rightfully his costs and is not indicative of the producers' economic position in the marketing channel. This is not the place to debate the equitability of this incidence but it can be noted that providing the supply function of producers is upward sloping there would be expected some sharing of increased marketing costs between producers and marketing firms. Perhaps more importantly testimony was heard that the producers do not at all times bear these marketing costs and the incidence of market fluctuations. In periods of short supplies, it is contended, some of these costs are passed on to forward markets and presumably consumers. According to one shipper:

> "I have reference here to our increased labor costs that are in my report and our increased freight costs but, basically, in short crop years we are able to pass on our costs to the consumer but when we have a slight amount of over-production we are no longer able to do this and all increased costs fall back to the grower — freight, the cost of packing, the cost of distribution, the increased wages at retail, the increased costs of the sites for new stores, the two percent increase in doing business because of additional Federal reports. I can put that in since this is a non-partisan Commission"[197]

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[196] McAllen Hearings, p. 309.

[197] Seattle Hearings, p. 100.

> "I have reference here to our increased labor costs that are in my record and our increased freight costs but, basically, in about crop years we are able to pass on our costs to the consumer but when we have a fall in demand of over-production we are no longer able to do this and all increased costs fall back to the grower -- freight, the cost of packing, the cost of distribution, the increased wages at retail, the increased costs of the strike for new stores, the two percent increase in doing business because of additional federal reports. I can put that in since this is a non-partisan Association."[1]

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[1]Seattle Hearings, p. 170.

[2]Hamilton Hearings, p. 207.

That sometimes these increased marketing costs may fall on producers and sometimes not, depending on the volume of supplies on the market, indicates there is more to the problem of cost incidence than the elasticity of supply. It also suggests the producers' residual income position and vulnerability to market disturbances can be corrected through supply and flow to market control measures.

Other portions of the testimony reveal the relation between the shipping point exchange arrangement and the growers' economic position in the industry. One producer emphasized the indeterminateness of his price as follows:

Mr. Chinn: We generally make an agreement where they (the shippers) come in and harvest it and package it and sell it for us. There is no guarantee, in my particular case, for a price or anything. It is whatever price they sell the product for on that date.

Mr. Mitchell: In other words, you have nothing to say about the price?

Mr. Chinn: Absolutely not.

Mr. Mitchell: He comes out and takes it over and you get whatever is the return?

Mr. Chinn: That is right.

Mr.Mitchell: It is a unique arrangement for marketing.[198]

As above, it is commonly found that producers agree to these marketing terms for a number of reasons. For some, there is no alternative but to cease production. In other cases these are enforced by financing arrangements. Objection can be raised in regard to these situations, but in most cases producers enter these arrangements voluntarily and without economic coercion. From an industry standpoint even such voluntary agreements can be objected to on the grounds of mutual

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[198]San Francisco Hearings, p. 639.

that sometimes these increased marketing costs may fall on producers and sometimes not, depending on the volume of supplies on the market. Whether there is room to the position of new industries with the elasticity of supply. It also supports the producers' profit of their position and ultimately to restrict differences can be corrected through supply and flow to normal normal measures.

Other portions of the testimony covered the relation between the shipping point assistance rendered and the growers' ensuing production in the industry. The pertinent phases of the interchange were as follows:

Mr. Quinn: We essentially have an area out where they (the shippers) come in a harvest to and ship it and sell it for us. There is no "merchandising" in particular done, for a price or anything. It is strictly packing and sell the product for a flat rate.

Mr. Mitchell: In other words, you have nothing to say about the price?

Mr. Quinn: A solidity not.

Mr. Mitchell: He goes out and buys it over and you ask what- ever is the return?

Mr. Quinn: That is it.

Mr. Mitchell: It is a unique arrangement for you, isn't it?

As above, it is commonly found that producers agree to these relatively terms for a number of reasons. For some, there is no alternative but to cease production. In other cases they are covered by financial arrangements. Objection can be raised in regard to these situations, but in most cases producers enter these arrangements voluntarily and without economic coercion. Even an industry shipperbut even such voluntary agreements can be objected to on the grounds of mutual

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[28]San Francisco Hearings, p. 627.

interdependence of the entire production sector; for the society there may also be an objection to these voluntary agreements since the price instability accompanying them may result in a misallocation of productive resources.

The producers' position as residual income claimant in the market channel arises from more than just the atomistic market structure of which they are a part. Although the relative sizes of growers and shippers may influence the existence of the economic institutions favoring this position, it is the institutions themselves, particularly incomplete exchange, which are at the heart of the matter. There would be no objection to this institution, or at least less objection, if it were not instrumental in the growers' position as the residual claimant in the system and if it did not encourage the conflict between output and pricing levels of the production and shipping point market levels. But whatever the merits of the institution it does have these effects, and it is a principal link in the contribution of the marketing sector to the farm price instability of fresh fruits and vegetables.[199]

The incidence of shipping point costs on growers provides the shipper with a relatively protected, full-cost margin.[200] It is a

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[199] Attention has not been given them here but there are merits to the incomplete exchange arrangement at shipping point. These include its applicability to a perishable product which must be moved to market rapidly, its potential for easing entry access for producers, and its encouragement of quality competition.

[200] Full cost pricing is discussed in detail by J.M. Clark in his: Competition as a Dynamic Process, (Washington D.C.:The Brookings Inst.), 1961, pp. 363-87. Full cost pricing is a pricing strategy whereby the firm sets prices to cover the standard accounting costs plus a normal return on investment. These prices are inflexible to short-run changes in demand but will adjust for enduring changes in demand. Full cost pricing is a simple rule which substitutes more or lessperfectly for the marginal pricing principal. The full cost price will return a profit somewhat above the competitive norm reflecting entry barriers and a liberal allowance for cost miscalculations.

independence of the entire production activity for the nearby firms may also be an objection to these voluntary agreements since the price fixing activity accompanying them may result in a misallocation of productive resources.

The producers' position as residual income claimant in the typical channel arises from more than just the domestic market structure of which they are a part. Although the relative sizes of growers and shippers may influence the existence of the economic institutions favoring this position, it is the institutions themselves, particularly incomplete exchange, which are at the heart of the matter. There would be no objection to this institution, or at least less objection, if it were not instrumental in the growers' position as the residual claimant in the system and if it did not encourage the conflict between output and pricing levels of the production and shipping points market levels. But whatever the merits of the institution it does have these effects, and it is a principal link in the contribution of the marketing sector to the farm price instability of fresh fruits and vegetables.[129]

The incidence of shipping point costs on growers provides the simpler with a relatively protected, full-cost margin.[130] It is a

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[130] Full cost pricing is discussed in detail by J.M. Clark in his: Competition as a Dynamic Process, (Washington D.C.:The Brookings Inst.), pp. 325-47. Full cost pricing is a pricing strategy whereby the firm sets prices to cover the standard accounting costs plus a normal return on investment. These prices are inflexible to short-run changes in demand but will adjust for enduring changes in demand. Full cost pricing is a simple rule which anticipates more or less perfectly for the marginal pricing principal. The full cost price will return a profit somewhat above the competitive norm reflecting entry barriers and a liberal allowance for cost miscalculations.

stable margin in the form of a fixed charge per unit of product marketed, but because of the relatively high ratio of fixed to variable costs the net profit of shippers varies with the size of the crop marketed. One witness explained the relative stability of returns to shippers and growers as follows:

> "Gross returns (net of prices paid to growers) to handlers have tended to vary less than gross returns to growers between large and small volume years. However, net returns (total returns minus total costs) to handlers are probably reduced to below average during large volume years because a large proportion of the handler's costs per bag are constant; that is, these costs per bag are not affected by changes in volume."[201]

And, because of this:

> ". . .the misfortune of the surplus holder is more apparent when actual price differences among stages are examined. Consumer demand, as evaluated by retail organizations, is passed back through the marketing system in terms of specific prices for specific quantities per time period. The handler, faced with the going price for carrots, plus or minus quality differentials, determines their value at the grower stage by deducting his total costs from the F.o.b. shipping point price.[202]

These two hearing excerpts point out not only the stimulus for shipper sales maximization, but also indicate the economic mechanism which might be expected to coordinate producer and handler output levels, the net profit of handlers, is guaranteed and somewhat insensitive to output levels. To the extent the handler's profit is dependent on the output level, it increases with sales and declining average costs.

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[201] McAllen Hearings, p. 66. Podany found that harvesting and packing costs per box of citrus declined with increased volume in Texas shipping point markets: Podany, J.C., Farris, R.O.P., Bohall, R.W., Citrus Prices and Market Structure in the Lower Rio Grande Valley of Texas, U.S. Department of Agriculture, Economic Research Service, Marketing Research Report No. 748, April 1966, p. 20.

[202] Ibid., p. 113.

stable margin in the form of a fixed charge per unit of product marketed, but because of the relatively high ratio of fixed to variable costs the net profit of shippers varies with the size of the crop marketed. One witness explained the relative stability of returns to shippers and growers as follows:

> "Gross returns (not of prices paid to growers) to harvesters have tended to vary less than gross returns to growers between large and small volume years. However, net returns (total returns minus total costs) to harvesters are generally reduced to below average during large volume years because a large proportion of the harvesters costs per bag are constant; that is, the costs per bag are not affected by changes in volume."[201]

And, because of this:

> ". . .the misfortune of the surplus holder is more apparent when actual price differences above ceilings are examined. Consumer demand, as evidenced by retail organizations, is passed back through the marketing system in terms of specific prices for specific quantities per time period. The handler, faced with the going price for cannots, plus or minus quality differentials, determines their value at the grower say by deducting his total costs from the f.o.b. shipping point price.[202]

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[201] McAllen hearings, p. 66. Foreman found that harvesting and packing costs per box of citrus declined with increased volume in terms shipping point markets: Foley, M.C., Parma, R.O.P., Bonell, M.C., Citrus Producer and Handler Structure in the Lower Rio Grande Valley of Texas, U.S. Department of Agriculture, Economic Research Service, Marketing Research Report No. 744, April 1966, p. 20.

[202] Ibid., p. 113.

The producers' role as residual income claimant is also sometimes justified by the competition shippers face in forward markets. According to this argument either the horizontal competition between shippers prevents them from systematically passing increased marketing costs forward or the market power of buyers prevents this. These positions are illustrated in the following dialogue:

Mr. Raitt: If it would be in the area of increased costs or whatever it is, why can't you pass these increased charges which are costs on up the line as opposed to taking it out of the growers' share of the total price paid for produce? What are you running into?

Mr. Mayes: Competition. I can't raise my price completely above everybody else, and if my costs go up and generally the trade is selling for a (single) price, I can't get more than the market.

Mr. Raitt: All of the shippers are in the same situation with their costs going up. Are they just continuing to pass it on back to the farmer? Do they find it is easier to do, to squeeze the farmer, if that is the term?

Mr. Mayes: It is not easier particularly. When you talk to one of these farmers, you would not think it is easier, but if you cannot — the farmer has it and the buyer doesn't have it, and it has to be disposed of. We have to move it or leave it there (in the field), and with a perishable product you are not in a place to defy your customer.[203]

Again, one is left dissatisfied with the performance of the shipper in the role of marketing agent for the producer. In the last analysis it is the product perishability and ownership by the producer which determines the cost and risk incidence. In the above excerpt no role is assigned the shipper in insulating the producer from marketing cost pressures. There is the pervading assumption the marketing sector may add services to the product flow and make a number of important

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[203]McAllen Hearings, p. 632.

The producers' role as residual income claimant is also so reduced by the competition shipper that in certain cases the producer may, according to this argument, either bid horizontal competition between shippers prevents them from exercising purely monopoly power, or accept forward or the market power of big-time pressure this. Three positions are illustrated in the following colloquy:

Mr. Mallt: If it would be in the area of transport rates or whatever it is, why couldn't you pass these increased charges which are borne only by the lines as opposed to taking it out of the producers' share of the wheat price paid for pipeline? What are you really hiding?

Mr. Keyes: Competition. I can't make my prices considerably above everybody else, and I'm not going to do that generally the trade is selling for a (single) price. I can't get more than the market.

Mr. Mallt: All of the shippers are in the same situation with their costs going up. Are they just going to pass it on back to the farmer? Is that going to be easier to do, to express the farmer, if that is the case?

Mr. Keyes: It is not easier particularly. When you talk to one of these farmers, you won't get him. It is small, but if you cannot — the farmer has it and the buyer doesn't have it, and it has to be shipped. We have to move it or leave it there (in the field), and with a perishable product you are not in a place to defy your customer.[20]

Again, one is left dissatisfied with the performance of the shipper in the role of marketing agent for the producer. In the last analysis it is the product perishability and ownership by the producer which determines the cost and risk incidence. In this sense except no role is assigned the shipper in introducing the producer from marketing cost pressures. There is the pervading assumption the marketing system adds services to the product flow and make a number of important

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[20]Mallen hearings, p. 432.

marketing decisions for a fee and no risk of product ownership. The result is that the production sector bears all market fluctuations arising from changes in supplies as well as those originating further along in the marketing channel.

Shipper Financing of Producers. Previous mention was made that shipping point financing of production operations is at one and the same time a source and a manifestation of farm price instability for fresh fruit and vegetable crops. It is a source of this instability when the risks of production result in too little or too many resources devoted to the production process; the former capital rationing is imposed by the financial institutions serving producers, the latter results when shippers contribute to excess productive capacity in the attempt to assure a steady source of supplies. In addition as will be shown in this section financing is a manifestation of price instability when it becomes a manner of enforcing incomplete exchange arrangements.

The relation of shipper financing to the risks of production were illustrated by the testimony of a shipper in South Texas:

> "We usually try to finance some desirable grower and help him along, especially for our early supplies. When it becomes easy to do and the season is just right and we have plentiful rains, too much is planted up to that time. If we have the grower with the proper know-how and land and proper equipment, we usually try to make some deals where we help him along with his growing and he might have additional problems in growing and he might not be inclined to take the additional risks and we help him, and sometimes it pays off for both of us and sometimes it does not."[204]

This is an illustration of output-increasing financing on the part of the shipping point firm. The arrangement not only ties the producer to the shipper, but it also increases the volume of crop at shipping

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[204]McAllen Hearings, p. 614.

marketing decisions for a fee and no risk of product ownership. The result is that the production sector bears all market fluctuations arising from changes in supplies as well as those originating further along in the marketing channel.

Thirdly, financing of production operations is at once and the same time a source and a manifestation of farm price instability from fruit and vegetable crops. It is a source of this instability when the risks of production result in too little or too many resources devoted to the production process; the "farm capital retaining" it imposed by the financial institutions exacting premiums, the latter results when shortages contribute to excess productive capacity in the attempt to secure a steady source of supplies. In addition as will be shown in this section financing is a ramification of price instability when it becomes a manner of enforcing long phase evaluate arrangements.

The relation of shipper financing to the risks of production were illustrated by the testimony of a shipper in North Texas:

> "We usually try to finance some diversified grower and help him along, especially for our early supplies. When it becomes easy to do and the season is just right and we have plentiful rains, too much is planted up to that time. If we have the grower with the proper know-how and land and proper equipment, we usually try to take care deals where we help him along with his growing and he might have additional problems in growing and he might not be inclined to take the additional risks and we help him, and sometimes it pays off for both of us and sometimes it does not."[20]

This is an illustration of output-increasing financing on the part of the shipper, but it also increases the volume of crop at shipper

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[20]McClellan Hearings, p. 614.

point markets. Typically where this financing is prevalent it does not determine whether the producer operates at all; it causes output in addition to what the producer would have undertaken without the financing. And as indicated above it is output exceeding that level which the grower would risk his own capital for.

For this reason and because financing often accompanies other tieing arrangements, producers in general do not look favorably on shipper financing. The alternatvie is the Farmers Home Administration, the Production Credit Association or local banks. The evidence is that the terms of credit and availability of credit from these other sources have stimulated shipper financing of producers. That this capital rationing is directly related to the risk of production is indicated by the following producer:

> "Financing institutions are not familiar with vegetable production and consequently are leery toward financing high risk operations. That brings about the type of financing by shippers where for a small advance per acre the grower gives up control of marketing."[205]

The following experience of a producer of fresh vegetables is also illustrative of the financing problem:

> "Since September of 1960 I have been financing my production costs through Valley Production Credit Association. Prior to that time (my) financing had been through a local state bank. When I had attempted to secure financing for my Fall production in the Fall of 1960, I was informed that the bank did not finance vegetable growing. It was too risky. I have chosen not to accept offers of financing from various shippers. These offers of aid have usually been in the form of seed or of advances on my expected income for the vegetables. To accept these offers of assistance would reduce my freedom as a free agent. Farmers I have known who have accepted aid and then suffered a failure have become virtually a slave to the shipper until such time that he is able to pay the

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[205]McAllen Hearings, P. 171.

point markets. Typically where this situation is prevalent it does not determine whether the producer operates at all; it causes cutbacks in addition to what the producer would have undertaken without outside financing. And as indicated above it is output exceeding that level which the grower would retain in own capital for.

For this reason and because financing often accompanies other trading arrangements, producers in general do not look favorably on shipper financing. The attempts in the Farmers Loan Administration, the Production Credit Association or local banks. The evidence is that the terms of credit or availability of credit from these other sources have attracted a higher percentage of producers. That this capital rationing is directly related to the risk of production is indicated by the following procedure:

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[20] Callen hearings, P. 171.

shipper back — if he is able to ever pay it off."[206]

The bondage spoken of by the witness is concerned not so much with the obligation to repay the loans as with the concessions the producer makes to a shipper under financing arrangements. The loss of freedom refers to the delegation of marketing decisions to the shippers under the incomplete exchange arrangements accompanying this financing.[207]

External capital rationing of fresh fruit and vegetable producers was not found to be limited to the above two sources. FHA loans may be the source of financing for producers just beginning operations, and one witness related his experience with this source of funds as follows:

> "If the FHA makes a loan to a farmer they apparently set up two-thirds or 75 percent of the funds that he needs to produce a crop, depending on him to have the rest of it. They surely know at the start that he does not have the rest, and I can take my books and show you where I have carried the biggest part of the loan on this additional money that the grower needed to complete a crop. It seems like they just turn over enough money to tantalize him but not enough to do the complete job."[208]

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[206] Ibid., p. 354.

[207] See: Food from Farmer to Consumer, National Commission on Food Marketing, June, 1966, p. 50 where it is indicated, "Under some arrangements, the grower lets the shipper handle his crop for a fee, with the grower bearing all market risks. These arrangements are often fostered by shipper financing of undercapitalized growers."

[208] McAllen Hearings, p. 664. Private lending institutions may stimulate excess supplies. One California fresh vegetable farmer explained the expansion of his farm from 130 acres in 1954 to 610 in 1965 thusly:

> ". . .in order to receive adequate financing, I am required by the lending institution from which I borrow operating capital, to develop a more economical unit. My lending institution says my operation should still be increased in size to become more efficient. As a method of developing an efficient and economical unit, I must double crop approximately 50 percent of my land each year." San Francisco Hearings, p. 660.

shipper back -- if he is able to ever pay it off."[206]

The bondage spoken of by the witness is commercial not so much with the obligation to repay the loans as with the restrictions the producer makes to a shipper under financing arrangements. The loss of freedom refers to the delegation of marketing decisions to the shippers under the incomplete exclusive arrangements accompanying this financing.[207]

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> "If the FCA makes a loan to a farmer they supervise set up two-thirds or 75 percent of the fruit that he needs to produce a crop, depending on him to have the rest of it. They surely know at the start that he does not have the rest, and I can take my books and show you where I have carried the biggest part of the loan on this additional money that the grower needed to complete a crop. It seems like they just turn over enough money to tantalize him but not enough to do the complete job."[208]

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[206] Ibid., p. 254.

[207] See: Test Farm Survey by Farmers' National Commission on Food Marketing, June, 1949, p. 20 where it is indicated, "Under some arrangements, the grower sells the shipper hardly his crop for a fee, which the grower bearing all normal risks. These arrangements are often fostered by shipper financing of unprofitable growers."

[208] Moulton Hearings, p. 634. Private lending institutions may stimulate excess supplies. One California fresh vegetable farmer explained the expansion of his farm from 140 acres in 1934 to 640 in 1945 thusly:

> ". . . in order to receive adequate financing, I am required by the lending institution from which I borrow operating capital, to develop a more economical unit. My lending institution says my operation should still be increased in size to become more efficient. As a method of developing an efficient and economical unit, I must double crop approximately 50 percent of my land each year." Ban Francisco Hearings, p. 660.

For the purposes here the credit terms and availability of credit from these public and private sources of financing are interesting for their effect on the stability of production and the quality of the producer-first handler exchange relation. Whatever the cost in terms of the quality of this relation, shippers are not a source of capital rationing. If anything, they over-stimulate production through their financing, and the organization of the market and its institutions of incomplete exchange encourage this.

This is the nature of the circular relation between market price instability and financing in the fresh fruit and vegetable industry. Because of the fluctuations and risks, as well as alleged low returns, producers must turn to shippers for financing, and this encourages the incomplete exchange arrangement which gives rise to price output conflicts between shippers and producers. The instability deriving from these conflicts is then transferred back to the producer through the incomplete exchange arrangement. Presumably the circle could be broken by injecting alternative sources of capital into the system or by introducing an institution for coordinating the pricing and output goals of the two sectors. A marketing cooperative might be such an institution. But these too require considerable operating capital and are for the most part financed by producer receipts. As a result they, too, are affected by the price instability of the crop. When a South Texas representative was asked why fresh vegetable cooperatives could not succeed in the same area where cotton and grain cooperatives were successful and patronized by much the same clientele, he replied that the government price supports stabilizing cotton and grain prices were

the government price supports stabilizing cotton and grain prices were successful and patronized by much the same clientele, be replied that not succeed in the same area where cotton and grain cooperatives were Texas representative was asked why fresh vegetable cooperatives could too, are affected by the price instability of the crop. When a fourth are for the most part financed by processor producers. As a result they, institution. But there too requires considerable operating capital and goals of the two sectors. A marketing cooperative might be such an by introducing an institution for coordinating the pricing and output broken by injecting alternative sources of capital into the system or incomplete exchange arrangement. Presumably the circle could be these conflicts is then transferred back to the producer through the fluctuations of the market and the introduction of income of those producers must turn to shipping for financing, and this encourages the inability and financing in the fresh fruit and vegetable industry. The role of the futures and risks, as well as alleged low returns, exchange encourage this.

This is the nature of the circular relation between market price and the organization of the market and the introduction of income of those engaged in it anything, they over-estimate production through their financing, quality of this relation, although are not a source of original instability. first hand or exchange relation. Whatever the cost in terms of this effect on the stability of production and the quality of the processor these public and private sources of financing are interrelated; for it was for the purposes here the one it terms and availability of credit from

responsible.[209]

In addition to the relation between shipper financing and the incomplete exchange arrangement, producers object to the effect of this financing on the quality of the producers' marketing decisions. Financing is generally received prior to planting but limits the economic decisions the producer would normally make at harvest time. Consequently financing has the effect of shifting the producer's harvest and marketing decisions from the time of harvest to the time of planting, and there is a consequent deterioration in the quality of these decisions. The shipper in this also gives up the option of alternative supply sources, but this appears to be justified by the assurance of market supplies. There is a benefit as well to the producer from the assurance of a market outlet, but without an accompanying forward price the tieing affect of financing would appear to be a net cost to the producer.

If financing did not mate producers with predetermined market outlets they would make the abandonment and marketing decisions at least with the knowledge of current market prices, the total market supply, the supply position of alternative shippers and the present performance of these alternative shippers. With financing, these cannot affect the decisions left to the producer. The resulting position of the financed producer is of concern to the industry. One witness was especially concerned for the flexibility of the producer in disposing of his crop:

> ". . .when a shipper is involved on the production level, such as paying for the seed, water, or other items of production costs, it would seem that the flexibility of the grower is

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[209]McAllen Hearings, p. 337.

responsible.[20]

In addition to the reduction in slippage financing and the inventible exclusive agency, producers' reflected in the effect of financing on the quality of the producers' marketing decisions. financing is generally received prior to planting but limits the economic decisions the producer would normally make at harvest time. Consequently financing has the effect of shifting the producer's harvest and marketing decisions from the time of harvest to the time of planting, and there is a consequent diminution in the quality of these decisions. The shipper in this also gives up the option of alternative supply sources, but this appears to be justified by the assurance of market supplies. There is a benefit as well to the producer from the assurance of a market outlet, but without an accompanying increase price the trading effect of financing would appear to be a net cost to the producer.

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> ". . . When a shipper is involved on the production level, such as paying for the seed, water, or other items of production costs. It would seem that the flexibility of the grower is

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[20] Hellen Hearings, p. 327.

limited in selling or disposing of his crop. . ."[210]

Producer marketing rationality under financing arrangements was also discussed by the following witness:

Mr. Marshall: From your estimation do you feel that shipper financing is a satisfactory source of credit?

Mr. Marcum: It is not satisfactory, generally, from our standpoint.

Mr. Marshall: Why not? Would there be some pocket (sic) that the shipper financing type of credit would put him (the grower) in a position of lacking bargaining power when it comes time to sell his fruits and vegetables?

Mr. Marcum: Very definitely, sir. He only has one place to go with the crop, and he does not know just how well they are getting along with this operation usually until it is too late.[211]

There is evidence that the position of financier held by those shippers engaging in such activities may, when crop supplies exceed those desired by shippers, give these firms considerable control over the crop abandonment decisions. For example a shipper financing a number of producers may harvest less than the complete crop in order to improve his quality of offering to buyers. The incidence of abandonment costs in this case is determined by the shipper. According to one witness:

". . .some of these people (shippers) have growing contracts (financing arrangements) with quite a few growers and they will come to one place and harvest some crops and then they will move to another place to harvest some crops, to get some of their money back. And they may not get back to the original man. He will apparently sell his crops for as much as he can for the various people who are under contracts with him. If there is too much of a particular crop, some

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[210] McAllen Hearings, p. 314.

[211] Ibid., p. 158.

Limited in selling or withholding of his crop. . ."[1]

Producer marketing rationality may or financial arrangements was also discussed by the following witness:

Mr. Marshall: From your estimation do you feel that shipper financing is a satisfactory source of credit?

Mr. Marcum: It is not satisfactory, generally, from our respondents.

Mr. Marshall: Why not? Do you think there are cases (plural) that shippers financing type of credit would [illegible] (the grower) in a position of loading her selling power when it comes time to sell the truck and vegetables?

Mr. Marcum: Very definitely, sir. In only the one place to [illegible] which the crop, can be [illegible] they are getting along with this operation usually until it is too late.[2]

There is evidence that the practice of financing held by those shippers engaging in such activities may, at crop supplies exceed those desired by shippers, give those firms considerable control over the crop marketing decisions. For even the shipper financing a number of producers may harvest less than the contracted crop in order to improve his quality of efficacy to buyers. The influence of a management cooks in this case is determined by the shipper. According to one witness:

> ". . .some of these people (shippers) have growing contracts (financing arrangements) with quite a few growers and they will move to one place and harvest some crops and then they will move to another place to harvest some crops, to get some of their money back. And they may not get back to the original man. He will appreciately sell his crops for as much as he can for the various people who are under contracts with him. If there is too much of a particular crop, some

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[1] McAllen Hearings, p. 214.

[2] Ibid., p. 145.

of these crops never get sold, apparently."[212]

Tieing arrangements such as provided by shipper financing of producers may become widespread for the industry after their original purpose is no longer existent simply because they represent a threat to the independent producer. It is not the need for finances which makes these arrangements of interest here but rather the effect they have on the rationality of the allocation of resources in production and the vulnerability of the producer to market disturbances originating further along in marketing channels. Capital rationing is not a sufficient explanation for the observed prevalence of shipper financing, and the cost of this financing in terms of market alternatives is too great for this financing to be merely a reflection of the poor capital position of farmers.

The cost of not entering into the financial arrangements in the form of a threat of the loss of a market outlet seems to explain much of the observed financing. This cost was illustrated by the testimony of a petroleum dealer serving principally fresh vegetable farmers:

> "For a number of years we had one account who was in a position to finance his own operations without getting financial assistance from a shipper. In fact, he would not have to borrow money from the bank — he had his own money. When petroleum products were delevered to him he would send the check back with the driver as, in his words, 'I don't like to get a bunch of statements at the end of the month.' However, he told me that he was eventually forced to get some financial assistance from some shipper because he had had the experience of raising crops and plowing them under while his neighbors were getting, at least, a portion of their crops marketed due to the fact that some handler has a financial interest in them."[213]

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[212] McAllen Hearings, p. 163.

[213] McAllen Hearings, p. 667.

of these crops never get sold, apparently."[52]

Using arrangements such as practiced by shipper Simonelly of Pachuca may become widespread for the in future either through conscious purpose or no longer dependent on ply housewife by preventing a shortage to the independent producer. It is not this or for different reasons these arrangements of interest have had upon the efficacy of the on the rationality of the allocation of resources in production and the vulnerability of the producer to market disturbances ordinarily further along in marketing channels. Contract production is not a sufficient explanation for the observed prevalence of shipper financing, and the cost of this financing in terms of marked alternatives is too great for this financing to be merely a reflection of the poor capital position of farmers.

The cost of not entering into the financial arrangements in the form of a threat of the loss of a market outlet does to explain most of the observed financing. This cost was illustrated by the testimony of a petroleum dealer somewhat principally fresh vegetable farmers:

> "For a number of years we had one account who was in a position to finance its own operations without needing financial assistance from a shipper. In fact, he would not have to borrow money from the bank — he had its own money. When petroleum products were delivered to him he would send the check back with the driver or, in his words, 'I don't like to get a bunch of statements at the end of the month.' However, he told me that he was eventually forced to get a financial assistance from some shipper because he had had the experience of raising crops and planting them under what were termed, at least, a portion of their crops ruined due to the fact that corn hunger has a financial interest in the 'milk

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[52] Allen Beasley, p. 17.

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These kinds of experiences soon have their effect and the financing assumes a different role from that it originally had. Paradoxically, the lack of the financing, tieing arrangement then becomes a source of capital rationing, as was indicated by the testimony of a banker:

> "In a discussion with a banker recently we were discussing this vegetable financing, and he pointed out in no uncertain terms that a bank was reluctant to loan money to a man to plant a crop when he didn't know where he was going to market the crop. . ."[214]

In summary, financing is a shipping point market institution intimately related to the previously discussed economic conflict of price and output levels of producers and shippers. Excepting this contribution to the residual income claimant position of the production sector, there is the objection that the practice has the potential for making non-integrated supplies subject to even greater price instability and thereby may be self-perpetuating. Finally, the financier role is inconsistent with the service-without-ownership orientation of the shipping point market. Shippers control the entrance into the fresh fruit and vegetable marketing channel. That this may be in conflict with the service orientation and financial role is indicated by the following exchange:

Mr. Raitt: Let me ask you this question concerning shippers' financing growers. You commented that some of the Federal agencies have actually contributed to this chronic condition of over-supply by keeping marginal inefficient people in business. . . Aren't shippers by financing growers doing the same thing? Do you say you have never financed a grower? How do you know whether he is efficient? What do you know about him?

Mr. Brand: This is business. Certainly, anything that we do to stimulate or bring about production — but we have

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[214] Ibid., p. 762.

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> Mr. Rabb: Let me ask you this question concerning shippers' financing services. You mentioned that some of the internal services have actually worked to this chronic condition of over-supply by keeping marginal inefficient people in business. . . Aren't shippers by financing growers doing the same thing? Do you know whether he is efficient? What do you know about him?
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[illegible], p. 762.

a market for it, too. There is a difference.[215]

Shipping Point Enterprise Combination and Integration. The financing arrangements between producers and shippers discussed above is not a complete integration of marketing functions between these sectors. They have the effect of combining the economic interests of two vertically related sectors but, as argued, not necessarily eliminating the economic conflicts between them. Ownership and contractual integration of the shipping point production and marketing sectors is taken up in this section; these are frequently stimulated by the same economic forces as shipper financing, shipper attempts to increase the volume of supplies and to precommit these supplies to market, and producer attempts to assure market outlets. In Chapter 3 it was suggested the various forms of enterprise combination in shipping point markets were reflections of alternative means of dealing with the production and marketing risks of fresh fruits and vegetables. This risk hypothesis of market organization is further investigated here.

A change in enterprise combination in the shipping point markets may alter the incidence of risk costs or change the costs themselves. W.O. Jones suggested that the integrated structures developed in the California lettuce shipping point markets had the effect of shifting production risks onto shippers and brokers who accepted the risks because it permitted them to gain economies of scale in packing and so serve customers regularly and maintain selling prices closer to

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[215] McAllen Hearings, p. 574.

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Shipping Point Intermediaries in Distribution and Integration. The financing arrangements between producers and shippers discussed above is not a complete integration of marketing functions between these sectors. They have the effect of coordinating the economic interests of two vertically related sectors but, as argued, not necessarily eliminating the economic conflicts between them. Ownership and contractual integration of the shipping point production and marketing sectors is taken up in this section; these are frequently stimulated by the same economic forces as shipper financing, shipper attempts to increase the volume of supplies and to preconsult these supplies to market, and producer attempts to assure market outlets. In Chapter 3 it was suggested the various forms of enterprise combination in shipping point markets were reflections of alternative means of dealing with the production and marketing risks of fresh fruits and vegetables. This risk hypothesis of market organization is further investigated here.

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[215]McAllen Hearings, p. 571.

the annual average.[216] For the general case it appears that while these integrated structures may reduce market uncertainty for those involved in them, this may be offset by the increased market risks of producers and shippers not entering into the arrangements. In any case a distinction must be made between those entering into the integration and those remaining in the non-integrated sector of the market.

The integration discussed here is principally that of the shipper into production. Forward, proprietary integration of the producer into the shipping point market is less common. There are not only cost barriers to this form of integration, but the large volume requirements of many buyers coupled with the established relations of buyers and shippers makes this form of integration only occasionally successful.[217] Barriers to non-cooperative integration of producers into shipping point markets are illustrated by the following dialogue:

Rep. May: But you still prefer this (employing a shipper to harvest, pack and sell the crop) as the most desirable arrangement for handling your produce?

Mr. Chinn: Financially, no, ma'am. But to my way of thinking, for efficiency, yes. I spend most of my time on the farm. I have tried to grow crops as well as I can. I feel that to sell it or package it is out of my line. I feel that this arrangement is a satisfactory arrangement. However, I feel that if it was possible that I did my own packaging, which I have done, I would be realizing a profit on what I must pay the shippers to do what they are doing.

Rep. May: Why did you not continue doing your own packaging?

Mr. Chinn: It is like I said, for efficiency, the other way is much better. I have no packing house, for one thing. I have no personnel to be continually on the phone making contacts to sell, which you must have. Today,

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[216] Jones, W.O., "A Case Study of Risk Distribution". Journal of Farm Economics, 33:237, May 1951.

[217] Food from Farmer to Consumer, op. cit., p. 50.

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[216] Jones, W.O., "A Case Study of Risk Distribution". Journal of Farm Economics, 33:297, May 1951.

[217] Quoted from Purvis to Commons, op. cit., p. 50.

> you must have a continuity in your business. You can't be in today and out tomorrow.[218]

It may be noted that this continuity, which serves as a barrier to producer entry into the shipping point market, was the very feature of the lettuce shipping point integration which according to Jones permitted the reduction of market risk costs by integration.[219]

If market risk is a source of the pressure for producers to integrate into shipping point markets, it would be expected that in addition to the possibility of gaining the shipping and packing profits as mentioned above producers would attempt to supplant shippers in an effort to change price and output levels at shipping point. This is illustrated by the following explanation of one grower for his integration into marketing:

> ". . .we have attempted to vertically integrate our farm operations in recent years by packing our produce and by delivery to packing sheds in the Valley the packaged produce such as carrots, onions, cabbage, potatoes, and peppers. In this way we hope to sell all of the produce on the farm and not leave acreages unharvested. We feel that it is imperative that all vegetables that are grown must be harvested in order to recover our growing expenses. In many cases on farms throughout the Valley acres on acres remain unharvested for the lack of labor crews willing to harvest these crops. Some fields may not be economically feasible for produce houses to harvest. I can put my own crews in the field and still salvage additional tons of produce. This additional tonnage can make the difference between going in the red or breaking even."[220]

This integration only into the harvesting operation is mild but indicates the source of integration as conflicting output levels of the producer and the shipper.

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[218]San Francisco Hearings, p. 650.

[219]Jones, W.O., op. cit., p. 258.

[220]McAllen Hearings, p. 333.

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[219]San Francisco Examiner, p. 620.

[220]Jones, W.O., op. cit., p. 298.

[220]McAllen Hearings, p. 333.

Shipper integration into production is both a fact and a threat to independent producers. It assures the shipper of a source of supplies for his packing plant which are not subject to open market negotiation. In its partial form, the integration meets the primary needs of the shippers' sales and packing operations and results in the non-integrated supplies being treated as residual supplies. It is these on which open market negotiation in the case of cash sales occurs. Furthermore, the threat of integration is that the shipper can gain supplies from his own production operations, hence producers must supply products, at prices not exceeding the cost at which the shipper could produce for himself.[221] There is no evidence shippers can produce more efficiently than independent producers, but the integration permits them to influence factor prices, at the least resulting in a price lower than would obtain if all production was sold on the open market. In the extreme, the integration could result in the pricing of supplies at the cost of production.

A producer in the position of supplying the needs of local shippers when integrated supplies are inadequate faces a very uncertain market. No producer could survive for long if this was the only market outlet available. For example a fresh vegetable producer commented on his withdrawal from the fresh market as follows:

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[221]The multi-enterprise firm can allocate its joint costs arbitrarily. This can result in the price of any one enterprise being set by that firm allocating the least cost to that enterprise. Cost data is not available for testing satisfactorily, but a partially integrated shipper may find his most profitable cost allocation prices the raw products at cost or below since the packing and shipping margin is guaranteed and the independent producer must compete with these and future integrated supplies. The threat of shipper integration is a very credible entry threat since most shippers are already partially integrated and possess the managerial skills for production; they are also in daily contact with producers leaving the industry and selling their operations.

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"There are a few (cash buyers) left but very few. Most of these cash sales are being made to a shipper who is also farming himself and only goes out and buys for cash when his own farming operations do not supply the needed supplies. This is the reason why I have gone away largely from producing for the fresh market. I felt I could not stay in business to just supply the materials when somebody else (the grower-shipper) is in a bind."[222]

The partial integration of the shipper into production is a sound insurance policy against fluctuations in market supply. But this is merely a trading of market risk between the grower-shipper and the independent producer as indicated by the following remarks of Mr. Brand, the world's largest onion shipper:

Mr. Marshall: You said that a person, if I understood you correctly, ought to guard himself against growing a crop that he did not have a market for?

Mr. Brand: Yes, sir.

Mr. Marshall: When you plan your operations in your planting time, you follow that practice? You don't grow more vegetables on your own (land) than you have a market for? . . .assume then that in your outlets that you look forward to that and you have a good growing season and that actually it has been so good that you have filled your outlets with the crops that you grew in your own operation. Then you would not be buying any to fill your outlets, would you?

Mr. Brand: That is right.

Mr. Marshall: If you had a very poor season and you only grew about half what you had a market for and you wanted to fill your outlets because your outlets have been your steady customers, then you would attempt to buy vegetables on the open market. Would that be right? In your operation as a shipper and as a grower of vegetables, you have a certain way that you can protect yourself on the market, do you not?

Mr. Brand: I would be a pretty bad businessman if I did not.

222McAllen Hearings, p. 191.

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Mr. Marshall: I don't mean to imply that you are not taking a risk. You are taking the same risk that anybody else is, except to the point that you are able to go on the market whereby you have a cushion whereby you can protect yourself to an extent.[223]

In the case of Mr. Brand it is doubtful he could own all the land on which his supplies are grown so large is his business. He could, as could any shipper, purchase his entire needs on the open market from independent producers, though he chooses not to do so. In the final analysis enterprise combination such as the partially integrated grower-shipper must be judged on its performance for the industry. And, there are compelling arguments that this particular enterprise combination makes a net contribution to the market instability faced by the production sector.

The second effect of integration — a lessening of price competition for non-integrated supplies — was also probed in the hearings. One shipper rather candidly admitted the purpose of shipper integration into production was to reduce competitive pressures between shippers in factor markets:

> "It used to be in the old days, yes, there were lots of independent growers and you could go out and buy patches (of vegetables). It got so expensive it finally turned out it was cheaper to grow it ourselves because so many people were competing for the independent acreage."[224]

Another shipper put up a similar defense of his integration in the following dialogue:

Mr. Raitt: Why do you feel that a shipper must grow to assure his supply if you have this whole Valley with which to deal?

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[223] Ibid., p. 555.

[224] McAllen Hearings, p. 703.

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Mr. Couch: Just as I stated, supply and demand will cause that. Oftentimes, we have entirely too much and we don't want it. On the other hand, if we try to say that we are going to need 20 or 30 acres of carrots per day, we try to have a grower planting so that we can have that supply. If we don't have it, then we are out looking or raising some other shipper's bid, trying to get our supplies.[225]

The final problem of shipper integration into production operations concerns one of the marketing conflicts discussed earlier in the chapter, the simultaneous role of the shipper as a marketing agent for the production sector and the owner and marketer of integrated supplies. According to the Commission report:

> "Agency sales arrangements commonly are made by shippers who also market products they own outright; such arrangements thus are fraught with potential conflicts of interest."[226]

There is general agreement in the industry such conflicts of interest can arise; disagreement centers on the performance of the conflict resolution. The following exchange is indicative of the problem and its recognition by shippers:

Mr. Raitt: In an area where the shipper is also growing and you get into a distressed position where you see an oversupply position arises and you cannot predict that and it occurs, using strictly a hypothetical situation, would you not as a very reasonable man see an area here for some possible conflicts of interest where the grower has merchandise to sell?

Mr. Brand: There are certainly some areas of potential conflict but we are very careful to harvest when they are ready and for the sales force to lose the identity of anything they sell?

Mr. Raitt: What areas of possible conflict could arise?

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[225] McAllen Hearings, p. 594.

[226] Food from Farmer to Consumer, op. cit., p. 50.

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Mr. Brand: If we had three classes of merchandise, one that we owned, one that we had some money in, and one that we had no money in, we could work on the ones we owned and plow up the ones we had the least money in. And I would not say the companies wouldn't do that but the history of our company is we don't do that.[227]

The economic conflict of a shipper handling both owned and other supplies could result in two forms of discrimination against the latter. The abandonment discrimination mentioned above would probably be the exceptional case because this is not consistent with the volume orientation of the shipper. At this point two of the market conflicts under discussion interact. A common result of the dilemma is that discrimination between owned and non-owned supplies occurs; the shipper can operate in both the integrated and non-integrated market if the supplies from the latter are received under the incomplete exchange arrangements and thereby are complementary to the integrated supplies in the sense that total average shipping point costs are reduced without the assumption of market risk. The second form of discrimination, then, is exchange discrimination. This and the interaction of the shipping point integration conflict and the economic motivation conflict are illustrated in the following:

Mr. Raitt: Mr. Mayes, this concerns the operation of a shipper who would also be a grower. If I understand this right — if the shipper is a grower and he has his own produce to sell, it behooves him to get the highest price possible for his own goods, isn't that right?

Mr. Mayes: That is right.

Mr. Raitt: When you receive produce from growers with whom you have some sort of an arrangement involving a consignment (or agency) sale, I assume then you are paid on a volume basis, on the units packed and sold?

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[227]McAllen Hearings, p. 569.

Mr. Brand: If we had three classes of merchandise, one that we owned, one that we had zero money in, and one that we owned and plow up the ones we had a lesser money in. And I would not say the competition wouldn't do that but the history of our economy is we don't do that.[22]

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Mr. Mayes: That is right.

Mr. Bailey: When you receive produce from growers with whom you have some sort of an arrangement involving a consignment (or agency) sale, I assume then you are paid on a volume basis, on the units packed and sold?

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[22]McAllen Hearings, p. 569.

Mr. Mayes: That is right.

Mr. Raitt: Under that situation, then price does not become as important as the volume, is that right? As far as your financial situation is concerned?

Mr. Mayes: As far as the financial situation is concerned, the volume would be important.

Mr. Raitt: A shipper would be interested in moving as much of this produce as he could, assuming it was not in competition with his own produce, assuming he sold his own goods and he had this to sell, then he conceivably would be interested in moving a great volume of it because he would be getting paid per unit? Would it follow, then, that the shippers would be interested in seeing as much of a commodity planted as possible and loaning money to get this commodity planted because they could harvest it and sell it on this basis?

Mr. Mayes: It may be someone may be interested in getting supplies to run it through a shed and let it go but there is a certain amount of merchandise that will move at a price and whenever you get a little over that, even between individual sheds, I realize my capacity and I don't want to go over it.[228]

It is unfortunate Mr. Mayes brought in the problem of diseconomies of scale in his answer since, while these may ultimately place some limits on shipper handling of non-integrated supplies, there is clearly a wide range of output over which counsel's appraisal of the interacting market conflicts is relevant. Nonetheless, the dialogue is illustrative of this interaction.

Farm Price Stability and the Retail Marketing Effort. The final fresh fruit and vegetable market conflict to be discussed is that between retail pricing and output levels as well as stability and the remainder of the marketing channel. Neither in the sections dealing with food retailing nor those concerned with fresh fruits and

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[228]McAllen Hearings, p. 627.

Mr. Meyer: That is right.

Mr. Raitt: Under that situation, then price does not become as important as the volume, is that right? So far as your financial situation is concerned?

Mr. Meyer: As far as the financial situation is concerned, the volume would be important.

Mr. Raitt: A shipper would be interested in moving as much of this produce as he could, assuming it was not in competition with his own produce, assuming he sold his own goods and he had this to sell, then he consciously would be interested in moving a great volume of it because he would be getting paid per unit? would it follow, then, that the shippers would be interested in seeing as much of a commodity planted as possible and locating money to get this commodity planted because they could harvest it and sell it on this basis?

Mr. Meyer: It may be someone may be interested in getting supplies to run it through a sieve and let it go but there is a certain amount of merchandise that will move at a price and whenever you get a little over that, even between individual sheds, I realize my capacity and I don't want to go over it.[225]

It is unfortunate Mr. Meyer brought in the problem of discommodes of scale in his answer since, while these may undoubtedly place some limits on shipper handling of non-integrated supplies, there is clearly a wide range of output over which economy's appraisal of the interacting market conflicts is relevant. Nonetheless, the dialogue is illustrative of this interaction.

Farm Price Stability and the Retail Marketing Effort. The final fresh fruit and vegetable market conflict to be discussed is that between retail pricing and output levels as well as stability and the remainder of the marketing channel. Neither in the evidence dealing with food retailing nor those concerned with fresh fruits and

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[225] McAllen Hearings, p. 627.

vegetables is this subject mentioned in the reports of the National Commission on Food Marketing. Yet the pricing and output strategies of food retailers are of central interest to preceding wholesalers, brokers, shippers, and producers. It is not only the most adaptable coordinating mechanism for short-run adjustments in the marketing sector, it is also the principal source of coordination problems in the fresh fruit and vegetable marketing channel.[229]

A number of factors enter into the retail pricing decisions for fresh fruits and vegetables. To the extent there is any evidence of an economic model of food retail pricing, it is that there are a great many pricing strategies, tactics and rules of thumb defying generalization among all companies, stores, areas, and products. And in addition to wholesale cost, the broad assortment of merchandising techniques, and the varying reactions of consumers to pricing and merchandising at retail may be listed as factors affecting retail pricing policy. A central difference between the retail and other market sectors of the fresh produce industry is the multi-product pricing process. For this, too, there are no simple generalizations, but it can be assumed the multi-product pricing model at the least provides the firm with greater discretion in pricing any one product such as fresh fruits and vegetables than does the single-product model.

The relative contribution of acquisition costs to retail prices is of interest to wholesalers and producers who may seek to influence

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product flow to market with price adjustments. A recent investigation of retail food pricing by Paul Nelson and L.E. Preston termed the multi-product pricing of retailers "variable price merchandising".[230] By this is meant the simultaneous and sequential manipulation of selected prices up and down in order to draw the attention of consumers to the product offerings of the firm and to differentiate the product offering from that of competitors.[231] The study concluded, ". . .the operation of a strong and systematic cost-push-through as a fundamental explanation for changes in retail prices is not indicated."[232] And,

> "Even when attention is given to the fresh produce items, for which wholesale and retail price associations would appear to be most likely, the results are weak."[233]

The study concluded, ". . .the variability in retail prices is clearly the result of many factors other than wholesale price changes."[234] For the most part, the study associated the lack of relation between retail and wholesale prices with the multi-product pricing decisions of retailers. For purposes here the implication of variable price merchandising at retail is that prices are adjusted to evoke demand responses on the part of consumers, not in response to a change in demand

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[230] Nelson, P.E., Preston, L.E., op. cit.

[231] Ibid., p. 4.

[232] Ibid., p. 91.

[233] Ibid.

[234] Ibid., p. 93.

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or acquisition prices.[235]

In addition to the multi-product position of food retailers, their short inventory position, their role as chief advertiser and promoter, and the tendency for consumers to engage in one-stop shopping contribute to the retailer's ability to price in a manner designed to influence behavior in his forward markets and somewhat independently of his factor markets. The individual food store need not be competitive with other stores on all items but only for those items frequently purchased or included in the consumers' perceptual market basket.[236] And one form of competition open to the multi-product firm, the implications of which are clear for retail and wholesale price relations, is the shifting of overhead or even variable costs among products in accordance with consumer demand elasticity and product seasonality.

The relation of retail and farm prices was illustrated by a producer of lettuce in California, a State having a near monopoly on

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[235] There is little evidence to suggest there has been a pronounced trend toward a weakening of the relation between retail and wholesale prices for fresh fruits and vegetables. Preston and Nelson were not able to show that the chainstore form of retail organization produced different results from the affiliated and unaffiliated retail organizational forms in this respect. Hence, in examining this price relation I am not studying a problem which has been the result of the growth of the chainstore. The relation derives from inter alia the multi-product nature of food retailing and doesn't seem to be related to the market structure of food retailers.

[236] The various uses to which fresh fruits and vegetables can be put in the retail market — as traffic builders, to build a high quality reputation regardless of prices, or to promote a low price image — are indicative of the forward orientation of the pricing process to the consumer for these products and result in the fact that, "Only a few chains are concerned about being competitive on all items in the produce department. Most are concerned only about the general impression or images which their prices create.": Manchester, A.C., "Margins, Prices and Competition in the Fruit and Vegetable Industry", 4th Annual Agricultural Marketing Conference, Ohio State University, AE 333, Mar. 15, 1962, p. 76.

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the production of lettuce during the period under consideration:

> "The prices (of lettuce) to the farmer do not reflect prices paid by the housewife for the produce. I offer as evidence, the U.S. Market News Service daily quotation F.o.b. Salinas (California) price to the shippers and the advertised sales of lettuce by a supermarket. At the beginning of this four consecutive week period, the market price to the farmer was a 50 year all-time high of $3.00 per crate. At the end of this four-week period, market price was so low as to result in a loss of 25 cents per crate to the farmer. During this fluctuation, or decline, the sales price to the consumer remained the same: two heads for 39 cents. The old law of supply and demand does not apply here.
> On May 5, the market price was net to the farmer around $3.00 per crate. The lettuce on the supermarket sale was two heads for 39 cents. On May 12, the market started declining to $2.75 to the farmer. Still, the sales price on that day was two heads for 39 cents at that market. On May 19, the market slipped to $2.50 and still the price here in the sales paper of that same day was the same. On June 16, the market declined to the point where it was $1.15 F.o.b. to the shipper, where the farmer is actually taking a loss on this $1.15, and the sales price on that day was two heads for 39 cents."[237]

The distance of the farmer from the retailer and his depth of knowledge of retail practices generally calls for a discounting of these kinds of economic research, although they are common. But the above was a true experience and, in spite of its weakness for proving exploitation of the producers, it is a good example of the effects of multiple-product variable price merchandising.

Hoos studied the retail pricing of oranges in selected cities and found them correlated with wholesale prices with a lag sufficient for inventory turnover, indicating that retail price is more closely related to original cost than to replacement cost.[238] For perishable fresh fruits and vegetables, of course, the difference between these

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[237] San Francisco Hearings, p. 634.

[238] Hoos, S., "The Behavior of Marketing Margins on Citrus Fruit", Journal of Farm Economics, Dec. 1952, No. 5, p. 914.

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two cost concepts may vary widely in the short-run. In a study of the retail pricing of fresh tomatoes in Ohio supermarkets Brown reported retail prices to be responsive to changes in the wholesale price, but the responsiveness varied among greenhouse, vine-ripened, and tube-packed tomatoes.[239] Another study of this price-cost relation for a number of fresh fruit items reported that retail prices of individual fruits are not closely related to costs nor are they the short-run profit maximizing prices presumably because the prices are those which provide a long-run profit over the entire fresh produce retail department, allowing for product interdependence in promotion and pricing.[240]

[239] Brown, J.D., "Pricing of Tomatoes in 214 Ohio Retail Stores", 4th Annual Agricultural Marketing Conference, Ohio State University, AE 333, Mar. 15, 1962, pp 81-86.

[240] Hoos, S., Weekly Prices and Retail Margins - Small, Medium, and Large Stores, Oranges, Lemons and Grapefruit, Denver, Aug. 1948 - July 1949, California Agricultural Experiment Station, Giannini Foundation Mimeo Report No. 170, Sept. 1954. The profit maximizing output was calculated by regressing the marketing margin on the sales volume, where the margin is taken as a measure of profit - gross profit, not net profit. Because of prices designed to maximize profit over the entire fruit line or for some other, undetermined reason it was found the output levels of oranges for large retail stores were some 74 percent of the profit (margin) optimizing output, 40 percent of the optimal output for small retailers. Another, less quantitative test of the profit maximizing behavior of retail pricing of fresh produce concluded that the behavior of the retail-wholesale marketing margin was consistent with short-run profit maximization; but there was no discussion of individual crop prices and output levels. See: Lee, W.A., Fouraker, L.E., "Profit Maximization and Margins in the Retailing of Perishables", Journal of Marketing, Oct. 1955, pp. 171-73. Reflecting both price elasticities and the profit maximizing retail prices of fresh fruits and vegetables, the average gross margin for produce in chainstores was 32 percent in 1964; the total store gross margin for all food and non-food products was 23 percent. In the same year produce accounted for about 9.5 percent of chain-store food sales but contributed 13.2 percent of gross profits of the store: Chain Store Age, July 1965 issue, p. 17. The use of gross profit rather than net profit overstates somewhat the profit contribution of fresh produce to store profit.

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[229] Brown, D.D., "Pricing of Tomatoes in 214 Ohio Retail Stores", 14th Annual Agricultural Marketing Conference, Ohio State University, AE 333, Mar. 15, 1960, pp 61-67.

[230] Moos, S., Weekly Prices and Retail Spreads - Fruit, Meats, and Large Stores, (Preliminary Mimeographed Manuscript, 1956. Based - Many Food California Agricultural Experiment Station, Giannini Foundation Mimeo Report No. 170, Sept. 1954. The profit maximizing output was calculated by regressing the marketing margin on the sales volume, where the margin is taken as a measure of profit - gross profit, not net profit. Because of prices designed to maximize profit over the entire fruit line or for some other, undetermined reason it was found the output levels of oranges for large retail stores were some 74 percent of the profit (margin) optimizing output, 40 percent of the optimal output for small retailers. Another, less quantitative test of the profit maximizing behavior of retail pricing of fresh produce concluded that the behavior of the retail-wholesale marketing margin was consistent with short-run profit maximization; but there was no discussion of individual crop prices and output levels. See: Lee, W.A., Fourraker, L.E., "Profit Maximization and Margins in the Retailing of Perishables", Journal of Marketing, Oct. 1955, pp. 172-73. Reflecting both price elasticities and the profit maximizing retail prices of fresh fruits and vegetables, the average gross margin for produce in chainstores was 32 percent in 1954; the total store gross margin for all food and non-food products was 23 percent. In the same year produce accounted for about 9.5 percent of chainstore food sales but contributed 13.2 percent of gross profits of the store: Chain Store Age, July 1955 issue, p. 17. The use of gross profit rather than net profit overstates somewhat the profit contribution of fresh produce to store profit.

The pricing and output levels of retailers are subjects of concern to the remainder of the fresh fruit and vegetable marketing channel for three reasons. First they derive from a multi-product pricing effort which largely reflects consumer demand only in the aggregate and permits retailers considerable pricing discretion for any one crop or group of products. Secondly they indicate that retail prices may not be responsive to changes in factor costs and therefore may inhibit changes in product movements induced by price changes at wholesale or farm levels. Finally there is the concern that the retailers' strategic position in the marketing channel in greatest proximity to the consumer and thereby in the most favorable position for influencing the final product demand means that the remainder of the marketing channel must conform to the pricing and output levels established at retail. From these, arise two reoccurring complaints about the retail market sector: fresh fruit and vegetable prices are so high as to restrict movement and they are so inflexible as to preclude short-term adjustments to unexpected changes in supplies. The first is concerned primarily with the level of retail prices, the second with their stability; but both are relavent for the problem of farm price stability.

Calculated for forward competition with other retailers and evoking favorable responses on the part of consumers, there is no a priori reason to expect the resulting retail price and output levels to accord with those of previous market levels determined by long-run production decisions and daily fluctuations owing to weather, disease, and the timing of harvests. And to the extent these pricing and output levels are not congruent the resulting fluctuations in prices and supplies arising from the failure of retail prices to adjust to factor costs

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are incurred by wholesalers, shippers and producers. In this way the retail sector in combination with incomplete exchange arrangements elsewhere in the marketing channel contributes to farm price instability.

Similarly, few adjustments in output and resource allocation can be expected from producers in response to product price variations having their origin in retail merchandising policy and the varying responses of consumers to those policies. In both these problems there is a deterioration in the coordination of supplies and prices among the market levels. For example, Hoos noted the implications of retail pricing policy for the successful movement of supplies in surplus periods by changing wholesale prices.[241] And Allen concluded the inflexibility in the marketing system for fresh produce was due to retail pricing policies, and that this inflexibility contributed significantly to production cycles; further, the lack of relationship between retail and farm prices was judged an impediment to the ability of producers to rationally plan production to consumption needs.[242]

The mechanics of multiple-product retail pricing were explained by a shipper of Northwest fruits:

Rep. Sullivan: Mr. Klarhe, would this mean that, regardless of what the retailer would pay for the apples, he really can charge any price he wants to, can't he?

Mr. Klarhe: Certainly.

Rep. Sullivan: He is not basing his retail price on what he has to pay the producer?

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[241] Hoos, S., "The Behavior of Marketing Margins on Citrus Fruit", op. cit., p. 914.

[242] Allen, G.R., "The Short-Term Behavior of Distributive Margins on Fruits and Vegetables", The Farm Economist, 8:1-16, 1956.

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[211] Hoos, S., "The Behavior of Marketing Margins on Citrus Fruit", op. cit., p. 214.

[212] Allen, G.R., "The Short-Term Behavior of Distributive Margins on Fruits and Vegetables", The Farm Economist, 8:1-16, 1956.

Mr. Klarhe: He is using what the retailer calls a merchandising mix. In other words, he could put Golden and Red Delicious (at different prices) as they sometimes do to come out with the same margin which is 35, 40, or 45 percent. He is working for an (average) margin. That margin, whatever it may be, and he can buy a mix as he sees fit to make an average of 35, 40 or 45 percent.[243]

Another man testified of his experiences with retail pricing as follows:

> ". . .we have a bag in which we ship Winesap apples and we have a guarantee on this bag to remit the full purchase price. . . It is also a good index of what these people are paying for the apples because it is stamped on the bag when they return the bag. We have a three-pound bag sold at Corpus Christi for 29 cents that cost 31 cents delivered, and we have had them from Iowa at 69 cents that cost 32 cents delivered."[244]

Assuming in both these cases retail costs for the products were equal, the witnesses are merely describing a form of economic price discrimination at the retail level; this may involve the equation of marginal revenues for the various fresh fruit and vegetable crops. But this is not necessary to the problem; it is sufficient that retail prices have as their purpose to evoke short-term consumer responses. This is common in multi-product firms where the allocation of joint costs is somewhat arbitrary and there is product interdependence in promotion. The issue here is not the effect of the price discrimination on buyers but on suppliers. If such a pricing policy destroys the relation of retail and farm prices and the farm prices are used as guides to resource allocation in production, then the deterioration in the coordination of production with consumption must be included as one dimension of the performance of the price discrimination. At least a part

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[243] Seattle Hearings, p. 231.

[244] Ibid., p. 111.

> Mr. Klarke: Is is using what the retailer calls a merchandising mix. In other words, he could put milk and fat deficiens (at different prices) as it by products do to core out with the more margin which is 25%, 40% or 45% percent. He is willing for an (average) margin. That margin, however it may be, and he can buy a mix as he sees fit to make an average of 25%, 40% or 45% percent.[23]

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[23] Seattle Hearings, p. 251.

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of the responsibility for the failure of this coordination and the resulting farm price disturbances must be attributed to the retail pricing institutions.

At one of the NCFM hearings a representative of the California Department of Agriculture discussed a recent study completed by that organization of wholesale and retail price relations for fresh fruits and vegetables.[245] He indicated retail prices often did not reflect changes in prices at the farm level because retailers felt consumers either did not react to these price changes or they reacted adversely taking fewer quantities at lower prices since lower prices connoted poorer quality.[246] To this the representative added, "May I say I am still not ready to accept this philosophy. . .(and). . .if we have this philosophy at the retail level, that varying prices will hurt movement, we have a conflict that has to be reconciled one way or another?[247]

In its contribution to farm price variations, retail multiple-product pricing is allied with the incomplete exchange arrangement at shipping point markets. To influence consumer demand or increase the attractiveness of the firm's product offering the retailer may adjust relative product prices, leaving the store margin unchanged, but influencing individual product prices and movements. These disturbances, unrelated to any change in the state of the factor market, are nonetheless transmitted directly to the producer via the shipping point

[245] Report to the Director of Agriculture and the State Board of Agriculture Concerning a Survey of Prices and Price Spreads Between the Grower and Consumer of Certain Fresh Fruits and Vegetables, State of California, Department of Agriculture, Bureau of Marketing, Aug. 1964.

[246] San Francisco Hearings, p. 58.

[247] Ibid., pp. 59-60.

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[246] San Francisco Hearings, p. 59.

[247] Ibid., pp. 59-60.

exchange agreement.

There is another relation between retail pricing discretion and the shipping point market institutions. Just as integration into production may assure the shipper of a source of supplies for his plant, the multi-product nature of the retailing market function and the substitutability of food products in consumption frees the retailer from dependence on any one product. To be sure there are certain fresh fruits and vegetables which the retailer must handle to maintain his customers, but the merchandising and promotional effort applied to a crop at the retail level can influence its sales considerably. The following experience illustrates the position of the retailers in dealing with suppliers and the range of their marketing options:

> "On the 29th or 30th of September (1962), in Los Angeles, one of the large buyers came to the jobbing house who we ship the peaches to and told the man, 'I have bought peaches from you all month and I have paid you $3 a box. Now, I think that you ought to do me a great turn. I want to pay now $2.25'.
> The salesman says, 'This grower that is shipping me this fruit, his supplies are very limited. I can raise the price to $3.50, it (the market) is so short. Supply and demand at this time is such that I can raise the price a half dollar'.
> The buyer says, 'No, we have done a lot of business and now we want to pay you $2.25 so I can make a little profit here.'
> They couldn't agree and this buyer for this retailer said, 'All right, let me use your telephone'. In front of this salesman and his boss, he calls his warehouse and says, - I forget what name he used, but he talked to his representative at the warehouse - and he said, 'Smitty' or 'Jones, call all the stores and tell them to take the 19-cent sign off the peaches and put on 29 cents.' He turned to Mr.____ and said, 'I don't need your peaches now.'"[248]

This experience is related here, not because it is a common occurrence, but to illustrate the discretion the retailer has over a product which is virtually the sole source of profit for the producer and perhaps the shipper. There is no adjustment the producer could make in the

[248] San Francisco Hearings, p. 533.

exchange arrangement.

There is another relation between retail pricing discretion and the shipping point market institutions. Just as integration into production may assure the shipper of a source of supplies for his plant, the multi-product nature of the retailing market function and the substitutability of food products in consumption frees the retailer from dependence on any one product. To be sure there are certain fresh fruits and vegetables which the retailer must handle to maintain his customers, but the merchandising and promotional effort applied to a crop at the retail level can influence its sales considerably. The following experience illustrates the position of the retailers in dealing with suppliers and the range of their marketing options:

> "On the 29th or 30th of September (1942), in Los Angeles, one of the large buyers came to the packing house who we ship the peaches to and told the man, 'I have bought peaches from you all month and I have paid you $3 a box. Now, I think that you ought to do me a great turn. I want to pay now $2.25'.
> The salesman says, 'This grower that is shipping me this fruit, his supplies are very limited. I can raise the price to $3.50, it (the market) is so short. Supply and demand at this time is such that I can raise the price a half dollar'.
> The buyer says, 'No, we have done a lot of business and now we want to pay you $2.25 so I can make a little profit here.'
> They couldn't agree and this buyer for this retailer said, 'All right, let me use your telephone'. In front of this salesman and his boss, he calls his warehouse and says, - I forget what name he used, but he talked to his representative at the warehouse - and he said, 'Smitty' or 'Jones, call all the stores and tell them to take the 19-cent sign off the peaches and put on 29 cents.' He turned to Mr. ____ and said, 'I don't need your peaches now.'"[24]

This experience is related here, not because it is a common occurrence, but to illustrate the discretion the retailer has over a product which is virtually the sole source of profit for the producer and perhaps the shipper. There is no adjustment the producer could make in the

[24] San Francisco Hearings, p. 533.

short-run to this discretion. Another excerpt from the hearings illustrates the problem of the retailer's product discretion and perhaps also the difficulty of obtaining some kinds of information from the hearing process:

Chairman: Is it true that you are intimidated by the people you sell to from furnishing that kind of information to the general public (information about the size of the marketing margin)?

Mr. Murphy: We tread very lightly on their toes to be very honest about it.

Chairman: Why?

Mr. Murphy: Because they don't have to buy pears.

Chairman: They have to sell them.

Mr. Murphy: They don't have to buy or sell them, and sometimes they take a notion they won't buy or sell them until they can get them at the price they want.[249]

As noted the retail prices of fresh fruits and vegetables are less related to wholesale prices than to the forward competition of retailers and responsiveness of consumers to pricing and merchandising strategies. Reflected in these prices are several hypotheses of consumer behavior not adequately tested to date. For example, according to one witness:

"Many retailers believe, or at least assert, that the reduction of a cent per pound will not appreciably increase sales volume. For example, they assert that they can sell as much fruit at two pounds for 29 cents as they could for 14 cents or even 13 cents per pound. Thus there is a tendency on the part of many retailers to not reflect in their retail

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[249]Seattle Hearings, p. 145.

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> "Many retailers believe, or at least assert, that the reduction of a cent per pound will not appreciably increase sales volume. For example, they assert that they can sell as much fruit at two pounds for 25 cents as they could for 14 cents or even 13 cents per pound." This there is a tendency on the part of many retailers to not reflect in their retail

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[25]Hearings, p. 145.

prices reductions in the F.o.b. price of our fruits."[250]

Another hypothesis of consumer behavior relates to consumer responses to the psychological aspects of prices. Retail prices ending in the digit nine, many retailers believe, are the most attractive to consumers, and the price of 39 cents will be more attractive than one of 38 or even 37 cents. These rigidities in the retail pricing process result in discontinuities of farm demand functions. According to one witness these psychological price levels cause,

> ". . .increases or decreases (in retail prices) which are usually larger than justified. We do not suggest that retail prices should follow F.o.b. prices up or down at exactly the same rates, but we submit that psychological pricing does not provide an orderly method of increasing or decreasing prices at the retail or the F.o.b. level."[251]

Neither the accuracy of these hypotheses of consumer behavior nor the right of the retailer to price his products according to his best interests is at issue here. The important question here is the effect of such pricing policies, whether based on facts or the fancy of retailers, for vertical market coordination and the farm price stability of fresh fruits and vegetables. This effect presumably is destabilizing in that producers cannot affect retail prices in their best interests and in a manner which would coordinate total supplies with demand. In this respect, one witness replied as follows when asked

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[250] Seattle Hearings, p. 31. It is interesting to compare the alleged short-run price inelasticity of demand of retailers suggested by these kinds of arguments with the presumed short-run price elasticity of demand justifying retail variable price merchandising. The latter retail pricing strategy assumes that short-run price reductions of some products will produce favorable sales results; further, retail variable price merchandising as exemplified by the week-end special suggests that short-run price elasticity may be greater than that in the long-run.

[251] Seattle Hearings, p. 225.

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[251] Seattle Hearings, p. 225.

what he had done about the lack of relation between farm and retail prices:

Chairman: Would you discuss this with the retailer?

Mr. Klarhe: Yes.

Chairman: What do they say to you?

Mr. Klarhe: They say you are a nice fellow but this is really none of your damned business.

Chairman: Are they right about it?

Mr. Klarhe: To a degree, yes. But on the reverse of that when the price is stiely and they want a reduction in the F.o.b. price, we say to them, 'Well, we will make you a reduction of a quarter (per box), but will you change the retail price?' (They say), 'No, we can't because we are going to jump from 39 to 29, so we need a 50 cent reduction.'[252]

Another witness was less sympathetic with the right of retailers to set price levels in their own interests which may not be in suppliers' best interests:

Mr. Corkey: How about this psychological pricing that you make reference to that is engaged in by the chains? Do you think that that demonstrates a certain ability on their part to arbitrarily set the prices at which they are going to retail this fruit? (Note: counsel is wrong in associating the practice with chainstores; it is common among all retailers.)

Mr. Falk: I would say that they have the power to arbitrarily set it, that they do arbitrarily set it, and I think the way they do it is disadvantageous to the grower. If they raise the price too high, it will restrict the movement. The fruit moves slowly; it gets shop-worn in the stores; the quality is not as good. The consumer buys less. . .[253]

In this last excerpt from the hearing it is unfortunate the lack of relationship between retail prices and factor costs is referred to as

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[252]Seattle Hearings, p. 227.

[253]Ibid., p. 44.

what he had done about the lack of relation between farm and retail prices:

Chairman: Would you discuss this with the resolver?

Mr. Klarbe: Yes.

Chairman: What do they say to you?

Mr. Klarbe: They say you are a nice fellow but this is really none of your damned business.

Chairman: Are they right about it?

Mr. Klarbe: To a degree, yes. But on the reverse of that when the price is sticky and they want a reduction in the f.o.b. price, we say to them, 'Well, we will make you a reduction of a quarter (per box), but will you change the retail price!' (They say), 'No, we can't because we are going to jump from 39 to 42, so we need a 50 cent reduction.'[252]

Another witness was less sympathetic with the right of resellers to set price levels in their own interests which may not be in suppliers' best interests:

Mr. Corkey: How about this psychological pricing that you make reference to that is engaged in by the chains? Do you think that that demonstrates a certain ability on their part to arbitrarily set the prices at which they are going to resell this fruit? (Note: counsel is wrong in associating the practice with chainstores; it is common among all resellers.)

Mr. Falk: I would say that they have the power to arbitrarily set it, that they do arbitrarily set it, and I think the way they do it is disadvantageous to the grower. If they raise the price too high, it will restrict the movement. The fruit moves slowly; it gets shop-worn in the store; the quality is not as good. The consumer buys less. . .[253]

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[252] Seattle Hearings, p. 227.

[253] Ibid., p. 44.

an arbitrary pricing process. It is not; it is a logical pricing process based on perceived consumer responses to price and merchandising tactics. It is, of course, independent largely of retail factor costs.

Product interdependence in promotion may permit the multi-product food retailer to sell some products below their factor costs. These loss leaders as they are called are frequently fresh fruits and vegetables and have much the same effects on farm price stability as psychological pricing. The technical and legal definitions of this form of food retail pricing are still being promulgated in a number of state legislatures; Washington State now has a law against retail selling below cost. However the practice is legally defined, one of its economic effects may be to destabilize farm prices. One Northwest representative stated that in his opinion based on experience but not empirical data, "The practice by certain retailers of food products in the important Puget Sound market area of Washington of using fresh soft fruits as loss leaders has proved detrimental to market stability and to grower returns. . ."[254] His experience was that although the response to loss leaders requires that the practice be limited to only a few retailers, the immediate effect of one seller offering fruit at these prices is for all buyers to want the lower prices. In addition loss leader sales may result in consumer resistance to more normal price levels when excess supplies are cleared from the market in this manner. A final objection is that while the crop must be in adequate supply to qualify for the loss leader status, the stimulus for the practice derives from expected consumer responses and whether the practice will accord with the remainder of the retail marketing mix.

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[254]Seattle Hearings, p. 221.

practice will accord with the remainder of the retail marketing mix. practice derives from expected consumer responses and weaker the supply to quality for the loss leader status, the stimulus for the loss leader sales may result in consumer resistance to more normal price levels when excess supplies are cleared from the market in this manner. A final objection is that while the crop must be in surplus these prices is for all buyers to want the lower prices. In addition a few retailers, the immediate effect of one seller offering fruit at response to loss leaders requires that the practice be limited to only and to grower returns. . ."[224] The experience was that although the soft fruits as loss leaders has proven detrimental to market stability in the important Puget Sound market area of Washington of using fresh representative stated that in his opinion based on experience but not empirical data, "The practice by certain retailers of food products its economic effects may be to destabilize farm prices. One Northwest selling below cost. However the practice is legally defined, one of state legislatures; Washington State now has a law against retail form of food retail prices are still being promulgated in a number of psychological prices. The technical and legal definitions of this tables and have much the same effects on farm price stability as loss leaders as they are called are frequently fresh fruits and vege- food retailer to sell some products below their factor costs. These Product interdependence in promotion may permit the multi-product an arbitrary pricing process. It is not; it is a logical pricing process based on perceived consumer responses to price and retail flexibility tactics. It is, of course, independent largely of retail factor costs.

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[224]Seattle Hearings, p. 221.

Just as many crops in heavy supply do not receive loss leader treatment at retail, so do some crops in normal supplies become loss leaders. Again, the retail pricing strategy is independent of the factor market; the problem of vertical market coordination is that it is only by chance that price and output levels at retail are those expected or desired by wholesalers and producers of fresh fruits and vegetables.

The unstabilising influences of retail pricing policies on the derived demand for fresh produce is shown in Figure 9. A constant margin policy is assumed for ease of exposition. DD is the retail demand function, and dd' is the corresponding demand at farm level. At outputs less than om the retail and farm prices move in agreement. If om represents the optimum rate of supplies for the retail sector considering desired merchandising and pricing policies, then the farm demand becomes ddm. Farm supplies exceeding om will not trigger lower retail prices, hence greater consumption. Producer attempts to clear the market of additional supplies by lowering farm prices will not be successful. Instead of facing the ddd'd' demand function, farmers face the ddm function where increases in supplies reduce farm prices but do not affect sales. Farm prices must fall to P_1, where adjustments in retail pricing and merchandising strategy call for greater sales of produce, before the quantity bought by retailers exceeds om.

Figure 9 also indicates the effect of psychological pricing schemes on the derived demand for fresh produce. Let P_2 represent a retail price of 2 pounds for 49 cents and P_3 a retail price of 2 pounds for 29 cents. If retailers are unwilling to price the product at intervening prices, this strategy results in a discontinuous demand function at Or where retailers shift from the first to the lower price level.

at Or where retailers shift from the first to the lower price level. varying prices, this strategy results in a discontinuous demand function on the derived demand for fresh produce. Let P_2 represent a retail price of 2 pounds for 29 cents. If retailers are unwilling to price the product at intermediate prices, before the quantity bought by retailers exceeds one. Figure 9 also indicates the effect of psychological pricing schemes in retail pricing and merchandising strategy call for greater sales of but do not affect sales. Farm prices must fall to P_3, where adjustments face the dem function where increases in supplies reduce farm prices the market of additional supplies by lowering farm prices will not be successful. Instead of facing the kinked demand function, farmers retail prices, hence greater consumption. Producer attempts to clear demand becomes dem. Farm supplies exceeding Om will not trigger lower sidering desired merchandising and pricing policies, then the farm Om represents the optimum rate of supplies for the retail sector conoutput is less than Om the retail and farm prices move in agreement. If demand function, and dd' is the corresponding demand at farm level. At margin policy is assumed for ease of exposition. DD is the retail derived demand for fresh produce is shown in Figure 9. A constant

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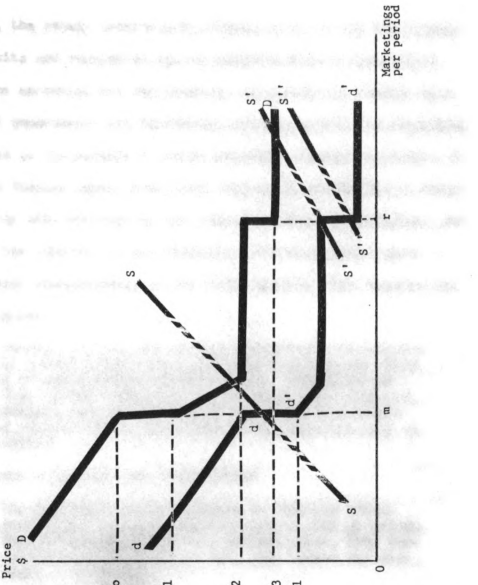


Figure 9. Effects of Retail Pricing Policies On the Farm Demand For Fresh Fruits and Vegetables.

Figure 9. Effects of Neatly Erring Policies On the Farm Demand For Fresh Pasture and Associated Price

Translated to the farm level, this results in a sudden farm price drop as supplies exceed Or until a farm price is reached justifying retail price P_3.

Finally, the retail control over display space in the final market for fresh fruits and vegetables may be destabilizing to farm prices. As part of the marketing mix the retailer can adjust the display space given to food departments and individual products within the departments. This, too, has as its purpose to evoke favorable consumer response. By and large the display space given fresh fruits and vegetables at retail varies directly with the size of the crop and product seasonality. But if it was in the interest of the retailer to do so, display space could be altered independently of the factor market. For example, one witness complained:

> "Another tendency on the part of many retailers is to restrict or greatly reduce display space and promotion when the price of apples or pears reaches certain levels. Retailers may believe that current prices do not represent good values to their customers, but reduced display space and less promotion mean reduced dollar volume and further slow the sale of the commodity."

Chairman: Where do you get that information?

Mr. Klarhe: The experience of our salesmen in visiting retail stores and our sales promotion men as they go around. When the price goes up to a certain point, they (the retailers) say, "Well, we will just reduce the display. . ."[255]

Care must be taken in inferring the motives of retailers when display space is adjusted. In the short-run their total selling space is fixed, and they must allocate it to the thousands of products stocked by the food retailer. If they are to feature seasonal fresh produce items, there will be a natural expansion and contraction of display space with

255Seattle Hearings, p. 225.

translated to the farm level, this results in a sudden farm price drop as supplies exceed Qr until a farm price is reached justifying retail price P_2.

Finally, the retail control over display space in the final market for fresh fruits and vegetables may be destabilizing to farm prices. As part of the marketing mix the retailer can adjust the display space given to food departments and individual products within the departments. This, too, has as its purpose to evoke favorable consumer response. By and large the display space given fresh fruits and vegetables at retail varies directly with the size of the crop and product seasonality. But if it was in the interest of the retailer to do so, display space could be altered independently of the factor market. For example, one witness complained:

> "Another tendency on the part of many retailers is to restrict or greatly reduce display space and promotion when the price of staples or pears reaches certain levels. Retailers may believe that current prices do not represent good values to their customers, but reduced display space and less promotion mean reduced dollar volume and further slow the sale of the commodity."

Chairman: Where do you get that information?

Mr. Clarke: The experience of our salesmen in wheeling retail stores and our sales promotion men as they go around. When the price goes up to a certain point, they (the retailers) say, 'well, we will just reduce the display. . . ."[22]

Care must be taken in inferring the motives of retailers when display space is adjusted. In the short-run their total selling space is fixed, and they must allocate it to the thousands of products stocked by the food retailer. If they are to feature seasonal fresh produce items, there will be a natural expansion and contraction of display space with

[22]Hearings, p. 221.

the volume of the crop to be sold. And in any case if display space is related to sales, reducing space with increasing prices should stabilize the market price. But it is not this regular seasonal adjustment of display space which is seen as the problem; rather the problem comes when it is to the retailer's advantage to alter display when there has been no concurrent change in the factor market. This is premised on the retailer's profit increasing with the consumer response to the change in display space and no change in factor costs. But the change in display space affects product supplies and movements of wholesalers and producers as well as their prices. For the retailer the change in display space may be the profitable substitution of one product for another in consumption; for the producer there is the loss of a market and the resulting affect on prices.

Summary. A general problem of vertical market coordination and farm price instability in the fresh fruit and vegetable industry emerges from the hearings of the National Commission on Food Marketing and related evidence. It is based on the interaction of the entire marketing channel, its institutions for accommodating the production and marketing risk accompanying a perishable product not changing form appreciably in the marketing process, the market conflicts in risk incidence and pricing and output levels arising out of the marketing process for such a product, and the failure of coordinating mechanisms, especially prices, to resolve these conflicts. The economic problems of the resulting farm price instability were described as the costs of crop abandonment and the costs of resource misallocation in the production and harvesting process where price was either not known due to the

tion and harvesting process where price was either not known due to the crop abandonment and the costs of resource reallocation in the production of the resulting farm price inflexibility were described as the costs of coordinating farm production and marketing, to resolve these conflicts. The economic problem especially prices, to resolve these conflicts. The economic problem is related to sales, reducing space with increasing prices should stabilize the market price. But it is not this reduction of display space which is seen as the problem; rather the problem comes when it is to the retailer's advantage to alter display when there has been no concurrent change in the factor market. This is premised on the retailer's profit increasing with a consumer response to the change in display space and no change in factor costs. But the change in display space affects product supplies and movements of wholesalers and producers as well as their prices. For the retailer the change in display space may be the profitable substitution of one product for another in consumption; for the producer there is the loss of a market and the resulting effect on prices.

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institutional exchange structure with the introduction of the product into the marketing system or was so unstable as to perform inadequately its directive role in the allocation resources.

For the entire length of the fresh fruit and vegetable marketing channel four economic conflicts between the vertically related market levels can be identified. In the shipping point market there is the shipper integration into production conflict and the sales versus profit maximization conflict. Both of these are derived from risk accommodating market institutions; the first from financing and contractual and ownership integration, the second from the incomplete exchange arrangement. The integration conflict is destabilizing to prices of non-integrated supplies while the economic motivation conflict affects prices at farm level through the role of the producer as residual income claimant and the failure of the shipping point market to insulate farm prices from market disturbances originating further along in the market channel.

Another conflict concerns the forward orientation of the shipping point firms which are in many cases the agents of the producer in the marketing process. Because of the incomplete exchange arrangement with the producer as well as excess capacity in shipping point markets and the relative costs to the shipper of losing a buyer compared to losing a supplier, the sales effort of the shipper favors buyers, and producers bear the costs of forward competition of shippers. This attempt on the part of the shipping point market to represent producers in forward markets and buyers in supply markets is destabilizing to farm prices. The fourth market conflict concerns the independence of retail

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pricing and output levels from the state of factor markets. The behavior of prices and output levels at retail is of crucial importance to the stability and level of prices at preceding market levels. Yet, there is no coordinating mechanism for insuring final price and output levels are those in the best interests of others in the channel.

In each of these conflicts there is an emphasis on the degree of vertical interdependence of the market levels. The price stability at farm level is the net product of each operating simultaneously at the various market levels described. The consequent price instability faced by the producer of fresh fruits and vegetables is not an adequate guide to the allocation of resources in production. Nor does it encourage rational marketing decisions on the part of producers. The best the producer can do is plant his historical acreage, assuming others will do the same, and transfer his harvest to his customary shipper. The market price will seldom be satisfactory, nor will it serve to guide resource adjustments in the next period.

The hearings evidence presented in this chapter is suggestive of a number of interactions of the marketing system, its institutions, conduct, and structure, with the production sector. While lacking in statistical content, the hearings nevertheless are evidence of a qualitative relationship between the marketing sector for fresh fruits and vegetables and farm price instability.

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Chapter 6.

MEASUREMENT OF RELATIONSHIPS BETWEEN THE MARKET SECTOR AND THE FARM PRICE STABILITY OF FRESH FRUITS AND VEGETABLES

The Framework of Analysis. Chapter 5 dealt with the economic organization and trends in the fresh fruit and vegetable industry related to the stability of producer prices. This chapter presents the results of attempts to make operational those characteristics of the market sector contributing to this instability. A time series, cross-commodity approach is used for testing the market sector-price stability propositions. The principal statistical technique employed is multiple regression analysis. The major limitation of the results is that annual, national price and marketing data were used. As noted previously, annual price variations are an average of a number of seasonal and area variations and as averages are probably less variable than prices by areas and seasons. Moreover, regional trends in the fresh fruit and vegetable marketing sector would be more desirable for the purposes of this study than the national data employed. But data limitations favor use of the latter, and regional trends probably do not vary greatly from the national trends. An assumption of the following is that after leaving the shipping point market the crops selected for analysis are all subjected to similar markets and market trends.[256]

The central premise of the cross-commodity approach, as with any

[256] This assumption seems valid for the crops selected, but there are some crops for which it would be untrue. For example, deciduous fruits are largely sold through the wholesale auction markets and could be expected to receive different treatment in the marketing sector than crops such as lettuce which follow the market channels given in Figure 1 .

Chapter 6.

MEASUREMENT OF RELATIONSHIPS BETWEEN FARMERS' PRICES AND
THE FARM PRICE-AVERAGING EFFECT OF MARKETING AGENCIES

The Treatment of Variability. Chapter 5 dealt with the economic orientation and trends in the farm price and marketing margin related to the stability of producer prices. This chapter presents the results of attempts to make operational those characteristics of the market sector contributing to this instability. A time series, cross-commodity approach is used for testing the market sector-price stability propositions. The principal statistical technique employed is multiple regression analysis. The major limitation of the results is that annual, national price and marketing data were used. As noted previously, annual price variations are an average of a number of seasonal and area variations and as averages are probably less variable than prices by areas and seasons. However, regional trends in the fresh fruit and vegetable marketing sector would be more desirable for the purposes of this study than the national data employed. But data limitations favor use of the latter, and regional trends probably do not vary greatly from the national trends. An assumption of the following is that after leaving the shipping point market the crops selected for analysis are all subjected to similar markets and market trends.[254]

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cross-sectional approach, is that the units of analysis are homogeneous in all characteristics except those under consideration. In this case, the assumption is that varying price stabilities of crops studied were due to individual crop characteristics and the interaction of these characteristics with a common, changing marketing system. Crops were selected to provide a wide range of characteristics which were unique to each crop and which could be related to the affect of a common, changing marketing system on price stability. The known rankings of the crops with respect to these characteristics substituted for the unit homogeneity assumption. Hence for this approach relationships between farm price instability and the marketing sector were studied indirectly through the relationships of crop characteristics affecting the price stability of crops and the changing marketing sector. Two objectives are served by this approach: (1) measurement of the relative contribution of supply characteristics to farm price instability; and (2) examination of which changes in the marketing sector are most closely related to farm price variability.

The crops chosen for study are given in Table 15 along with their relative rankings in a number of characteristics presumed to be related to price stability and the reaction of the crops to the changing marketing sector. This choice of crops represents both an attempt to include in the study the major fresh fruits and vegetables, within the limitations imposed by lack of data for some crops, and an attempt to choose crops providing a wide range of the characteristics listed. All of these crops move through approximately the same market channels from the shipping point market forward, and all are characterized by somewhat similar shipping point markets. Hence, it is expected all

somewhat similar shipping point markets. Hence, it is expected all from the shipping point market forward, and all are characterized by All of these crops move through approximately the same market channels to choose crops providing a wide range of the characteristics listed. the limitations imposed by lack of data for some crops and an attempt include in the study the major fresh fruits and vegetables, within keting sector. This choice of crops represents both an attempt to relative rankings in a number of characteristics presumed to be related to price stability and the reaction of the crops to the changing mar-

The crops chosen for study are given in Table IX along with their related to farm price variability.

examination of which changes in the marketing sector are most closely bution of supply characteristics to farm price instability; and (2) are served by this approach: (1) measurement of the relative contri- stability of crops and the changing marketing sector. Two objectives through the relationships of crop characteristics affecting the price farm price instability and the marketing sector were studied indirectly homogeneity assumption. Hence for this approach relationships between crops with respect to these characteristics substituted for the unit changing marketing system on price stability. The known rankings of the to each crop and which could be related to the effect of a co- selected to provide a wide range of characteristics which were weighted were due to individual crop characteristics and the induction of these characteristics with a common, changing marketing system. Crops case, the assumption is that varying price variabilities of crops studied cons in all characteristics except those under consideration. In this cross-sectional approach, is that the units of analysis are homogen-

Table 15. Selected Production and Marketing Characteristics of Fresh Fruit and Vegetable Crops Chosen for Study.

Crop	Relative Crop Importance[1]	Percent of Crop Sold Fresh[2]		Percent of Crop Produced In Major State[3]		Percent of Crop Produced in FLA-CAL-TEX[4]		Degree of Crop Perishability[5]	Production-Shipping Point Integration[6]	
	rank	%	rank	%	rank	%	rank	rank	%	rank
Lettuce	1	100	1	58	1	82	2	1	44	2
Tomatoes	2	16	7	31	4	68	3	2	27	3
Apples	3	62	5	34	3	9	7	5	NA	-
Peaches	4	57	6	29	5	29	6	3	NA	-
Onions	5	100	1	18	7	33	5	7	6	5
Celery	6	100	1	52	2	83	1	4	64	1
Carrots	7	100	1	25	6	63	4	6	17	4

[1]Measured by total farm value of the crops. From: Agricultural Statistics, U.S. Department of Agriculture, Statistical Reporting Service, annual.

[2]Ibid.

[3]Ibid. Either Florida, Texas or California is the major producing state for each of the fresh vegetable crops: Washington is the major apple producing state and California the major fresh peach producing state.

[4]Ibid. FLA-CAL-TEX refers to the states of Florida, Texas and California.

[5]A subjective appraisal of product perishability considering a normal movement through the marketing system. Does not neglect, but is not based entirely on the crops' applicability to storage.

[6]Source: Mighell, R.L., et. al., Contractual Production of Truck Crops, 12 Selected Areas, United States, U.S. Department of Agriculture, Economic Research Service, ERS-152, Mar. 1964, pp. 17-18.

Table 17. Selected Production and Marketing Characteristics of Fresh Fruit and Vegetable Crops in Oregon for 1978.

Crop	Relative Crop Importance Rank	Percent of Total Crop Produced in Major States	Rank	Crop Produced in Minor States	Rank	Percent of Crop Produced in Other States	Rank	Perishability Rank	Shipping Point Inspection Rank
Lettuce	1	100	1	83	2	17	1	4th	2
Tomatoes	2	74	2	34	3	26	3	2	3
Apples	3	62	2	29	2	38	3	2	-
Potatoes	4	57	1	29	2	43	3	6	5
Onions	5	100	1	48	1	52	2	4	1
Celery	6	100	1	52	2	48	3	4th	4
Carrots	7	100	1	52	2	48	3	5	4

Measured by total farm value of the crop. Source: Agricultural Statistics, U.S. Department of Agriculture, 1978.

Statistical Reporting Service, annual.

Sources:

Market Flow: Texas or California is the major producing area for the Pacific Northwest during winter months.

Notes: Marketing Season is the major supply producing area California during winter months.

Perishability refers to the susceptibility of the product to spoilage.

Shipping Point Inspection refers to the percentage of the total crop that is inspected at the point of shipment.

would be exposed to the national changes in the marketing system for fresh fruits and vegetables. So, different relations between these market trends and the price stability of crops can be attributed to the product characteristics in Table 15 or other factors not listed.

As measured by the farm value of the crops, lettuce is the most important crop listed, carrots the least important. The crops are also ranked by the percent of total supply sold in the fresh market. The allocation of the crop between the fresh and processed market is limited by varietal requirements of the two markets and is not a short-run production decision by which the farmer may affect the level and stability of prices. But because of the land, labor and capital substitutions between the two markets, long-run changes in the allocation of crops between these two markets may reflect producer attempts to secure more stable enterprises and crop combinations.

The ranking of the crops by concentration of production in the single most important state is included as a measure of the length of the marketing process for servicing a national market, the vulnerability of the crop to area weather and diseases, and the probable cohesiveness of producers. By this measure lettuce and celery rank highest of the crops and onions lowest. The high degree of producer organization in lettuce and celery production is well known; as Table 15 shows the integration of production and shipping point marketing is well developed for these crops also. A similar characteristic in Table 15 is the percent of the crop produced in the states of Florida, Texas, and California. This, too, is a rough approximation of the physical length of the marketing process since these states are all located a considerable distance from the large Eastern markets. But

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the measure is intended primarily to indicate the extent of product interregional competition; there are seasonal supplies of the crops coming from these states which are not competitive, but by and large there is interregional competition for those crops produced in these three areas in quantity.[257]

Table 15 also provides a perishability ranking of the crops studied. In combination with the length of the marketing channel, it might be expected that crop perishability would be related to price stability.[258] In part the rankings given in the table are caused by the different seasons in which the crops are marketed and in part because some crops can be stored for short periods of time at little cost. Lettuce and tomatoes are given the highest ordinal rating for this characteristic, onions and carrots the lowest. Finally, Table 15 gives the relative importance of the integration of production and the marketing sector for the vegetable crops studied.

There are a number of interesting comparisons in Table 15. The

[257]There is no a priori reason to believe that interregional competition by itself contributes to farm price instability of crops. But the seasonal overlapping of harvests from areas producing the same crop suggests this might be so. To the extent cooperation between competing areas develops, however, this need not be true. For an example of interregional cooperation designed to promote spatial price stability for California and Florida fresh citrus crops, see: Clark, J.M., Competition as a Dynamic Process, (Washington, D.C.: The Brookings Institute) 1961, pp. 305-7. Examining the price variability of selected California fresh vegetables, Carter and Dean suggested a relationship between those subject to interregional competition and high price variability: Carter, H.O., Dean, G.W., "Income, Price and Yield Variability for Principal California Crops and Cropping Systems", Hilgardia, 30:182, Oct. 1960.

[258]Gale reported that seasonal changes in farm prices tended to be less for the less perishable fresh produce items: Gale, H.F., Seasonal Variation in Farm Food Prices and Price Spreads, U.S. Department of Agriculture, Miscellaneous Publication No. 840, June 1961, p. 27.

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[258] Dale reported that seasonal changes in farm prices tended to be less for the less perishable fresh produce items: Dale, I.F., Seasonal Variation in Farm Food Prices and Price Fluctuations, U.S. Department of Agriculture, Miscellaneous Publication No. 870, June 1961, p. 27.

most important crop chosen for study, lettuce, ranks high in all the other crop characteristics as well. That crop is sold entirely in the fresh form, is the crop most geographically concentrated of those studied, is extremely perishable, and is second only to celery in the extent of integration of production with the marketing sector. Among other things this makes the crop highly vulnerable to weather and disease, subject to a highly organized and concentrated shipping point market, and liable to considerable market risk represented by the physical length of the marketing channel.

A comparison of tomato market price stability with that of lettuce is indicative of the stabilizing effect of the processing market, because tomatoes rank high in all the crop characteristics that lettuce does except the percent of the crop sold in the fresh form. Similarly a comparison of celery farm prices with those of lettuce is indicative of the importance of crop perishability for price stability.

Most onions, like lettuce, are sold in fresh form, but this crop ranks lowest of the vegetables for the other characteristics studied in Table 15. Consequently, the relative price stability of lettuce and onions is an indication of the importance of the crop characteristics except the fresh-processed market allocation. Of the vegetable crops in Table 15, carrots and onions consistently rank low in the selected characteristics.

The fruits chosen for study, apples and peaches, are characterized by production periods of considerably greater length than the vegetables. But these fruits for the most part pass through the same marketing system as the vegetable crops and as Table 15 shows are not

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Table 16. Price Index of Selected Fresh Fruits and Vegetables, 1947-64.

Period	Carrots	Celery	Lettuce	Onions	Tomatoes	Apples	Peaches
	farm price: 1953-55 = 100						
1947-49	97.9	117.5	106.9	165.6	86.9	79.0	NA
1950-52	94.1	106.5	98.4	198.5	100.9	75.7	NA
1953-55	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1956-58	87.1	106.6	94.9	152.9	106.4	91.4	90.5
1959-61	83.6	89.7	93.9	138.8	109.8	76.8	77.0
1962-64	92.7	117.5	105.9	150.0	115.3	84.8	89.2

Source: Agricultural Statistics, U.S. Department of Agriculture, Statistical Reporting Service, annual.

Table 10. Price Index of Selected Items and Weighted Index, 1947-48

Period	Cereals	Gram	Pulses	Oilseeds	Condiments	Vegetables	Weighted Index
			Base year: 1942-43 = 100				
1947-48	97.4	111.2	102.6	100.0	111.3	81.3	91.2
1948-49	93.2	99.1	95.6	103.8	108.2	98.3	94.3
1949-50	81.1	104.2	94.4	103.9	104.4	87.4	83.2
1950-51	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1951-52	94.1	104.2	92.4	114.2	100.6	112.4	NA
1952-53	95.9	104.2	100.0	114.2	98.9	99.0	NA

Source: Weekly Statistical Supplement, Reserve Bank of India, Bombay, various issues.

significantly different in crop characteristics. The allocation of the apple crop between the fresh and processed markets is not unlike the market disposition of the peach crop, and their degree of perishability relative to the vegetable crops is quite similar. The extent of production integration for these fruits is not known. Relative to the vegetable crops the two fruits selected rank low in the percent of crop produced in the three states of Florida, California and Texas. Although interregional competition may not be as intense for these fruits as for the vegetables, their distance from the major state to the Eastern market is appreciable. It can also be noted that most fruits would rank higher in the share of output produced in the three major states than is the case for apples and peaches.

Trends in Farm Prices. Table 16 illustrates the trends in farm prices of the seven crops selected for study over the post-war period. The farm prices of all the crops increased from their late-1950 levels to the 1962-64 average.[259] Measured from the 1953-55 base, the farm prices of carrots, lettuce, apples and peaches declined throughout the 1950s. Only the price of tomatoes consistently trended upward over the 1950-64 period.

Figure 10 illustrates the annual price variability of these crops. For clarity, two vertical axes are used in the figure, but vertical distances are equal on them. Stability is measured as the annual percentage change in farm prices from the average of adjacent prices. This

[259] This was the general trend in farm prices of all fresh fruits and vegetables. The price index of fresh produce increased 20 points over the 1958-64 period, according to figures published by the National Commission on Food Marketing: Technical Study no. 4., June 1966, p. 31.

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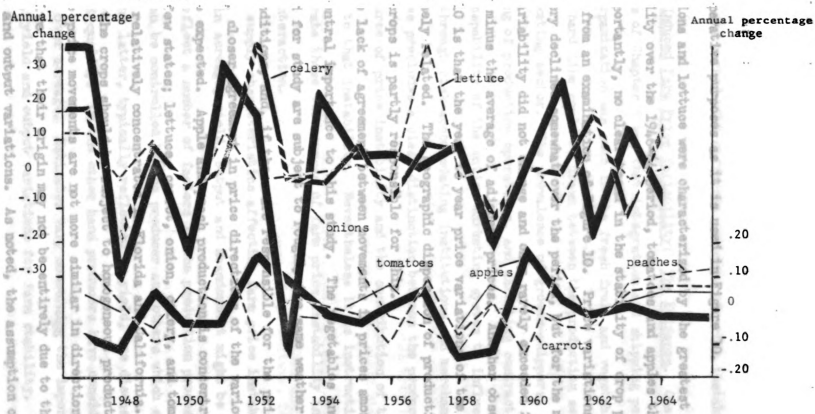
Trends in Farm Prices. Table IV illustrates the trends in farm prices of the seven crops selected for study over the post-war period. The farm prices of all the crops increased from their late-1930 levels to the 1942-44 average.[29] Measured from the 1923-25 base, the farm prices of carrots, lettuce, apples and peaches declined throughout the 1920s. Only the price of tomatoes consistently trended upward over the 1920-44 period.

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Figure 10. Year To Year Variability In Farm Prices of Selected Fresh Fruits and Vegetables, 1946-1964.



Source: U.S. Department of Agriculture, Statistical Reporting Service, Agricultural Statistics, annual. Stability is measured as the annual percentage change in price from the average of adjacent prices.

Percentage Change
Year-to-Year
Agriculture
Construction
Finance
Manufacturing
Mining
Services
Trade
Transportation

measure has the property that neither annual price increases nor decreases can exceed 100 percent. The measure does have the effect of reducing the amplitude of price fluctuations but is satisfactory for comparative purposes as it is used in Figure 10.

Onions and lettuce were characterized by the greatest price instability over the 1946–64 period, tomatoes and apples the least. More importantly, no clear trend in the stability of crop prices emerges from an examination of Figure 10. Price variations for onions and celery declined somewhat over the period, but for the most part price variability did not change and only rarely exceeded 20 percent plus or minus the average of adjacent prices. Another observation of Figure 10 is that the year to year price variations of the crops are not closely related. The geographic dispersion of production areas of the crops is partly responsible for this.

The lack of agreement between movements in prices among the crops is of central importance to this study. The vegetables and fruits selected for study are subject to roughly the same weather and biological conditions, and, if these are responsible for the price fluctuations, closer agreement in price directions of the various crops would be expected. Apple and peach production is concentrated in only a few states; lettuce, carrot, onion, celery, and tomato production is relatively concentrated in Florida and California. For these reasons the crops should be subject to homogeneous production conditions. That the price movements are not more similar in direction is only suggestive that their origin may not be entirely due to the production process and output variations. As noted, the assumption of the study is that the crops are all subjected to approximately the same

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marketing system and trends as well. The remainder of the chapter is an investigation of why crops with similar production and marketing characteristics, the two hypothesized sources of farm price instability, are marked with different patterns of price instability.

Supply-Induced Farm Price Variability: The Evidence. One of the conclusions of Chapter 5 was that integration and shipping point enterprise organization was such in the fresh fruit and vegetable industry that no hard line could be drawn between the production sector and the marketing sector. The prevalence of grower-shippers, shipper financing of production operations, and marketing contracts as well as the capability of the entire marketing system to influence farm prices through risk-accommodating institutions and merchandising practices precludes a clear distinction between the production process as a source of price instability and the contribution of the marketing process to that instability. Nevertheless it is instructive to attempt to separate these two sources of farm price instability in spite of their interaction.

As supply characteristics affecting farm price instability, variations in acreage, yield, output and abandonment might be listed. These reflect a number of factors in the production process, some of which can be controlled by the producer and others which cannot. Among the latter, typically reflected in yield, are disease, weather, and seed quality. On the other hand producers have considerably more control over acreage. Estimates vary concerning the importance of acreage, yield and output variations for farm stability. An unpublished study by Karl Fox reported that 79 percent of the year to year

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variation in watermelon prices was associated with variations in the quantity marketed, temperature, and disposable personal income.[260] It was estimated that for the 1921-41 period changes in per capita production and disposable income accounted for some 92 percent of the yearly variations in farm prices of late onions and only 40 percent of the variations in prices of early and intermediate-season onions.[261] Equation (1) of Chapter 4 it will be recalled indicated that 71 percent of the variation in farm prices of all fresh fruits and vegetables was associated with domestic production and three other explanatory variables.[262]

Although variations in total domestic output of fresh fruits and vegetables include the effects of changes in acreage and yields, the measures are not perfectly correlated nor is there reason to believe acreage and yield make equal contributions to total crop output variations.[263] An early study of farm price and yield stability for a number of fresh vegetable crops was updated for the purpose of

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[260] Reported in: Shuffett, D.M., The Demand and Price Structure for Selected Vegetables, U.S. Department of Agriculture, Technical Bulletin No. 110, Dec. 1954, p. 25.

[261] Ibid., pp. 33-39.

[262] Table 20 below provides the coefficient of multiple determination for the regression of per capita consumption and income on the farm prices of the seven fresh fruits and vegetables. Per capita consumption may be taken to represent the measure of variations in output of these crops. The coefficients or percent of farm price variations associated with annual changes in output and consumer income range from .81 and .60 for peaches and apples, respectively, to .07 and .02 for lettuce and onions. These are indications of the relative importance of output and final demand annual variations for explaining the stability of farm prices.

[263] Shuffett estimated over the 1921-41 period that 60 percent of the variation in output of fresh onion crops was associated with variations in acreage and 40 percent with variations in yields: op. cit., p. 33.

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comparing long-term trends in farm price and yield stability.[264] The results are given in Table 17. Farm price and yield variation are expressed as standard deviations of first differences to minimize the effect of secular trend on variation and are divided by the mean of the observations to make estimates comparable among crops.

Table 17 provides comparisons of farm market stability for a number of crops over two time periods. The long-term trends are represented by data for the 1918-40 years and the 1946-64 period. There was a stabilization of farm prices for all crops in Table 17 over these two time periods; for most crops the post-war farm price variations were about one-half the variations in the pre-war period. For the same periods, each of the crops was marked by a decline in the variability of yields.

The stabilization of prices and yields over these periods did not proceed at equal rates for all the crops in Table 17. As a result there were changes in the rankings of the crops by the measures of market stability. In the 1918-40 period there was a close agreement of crop rankings by price and yield variability; onions and cabbage were marked by high price and yield variations, tomatoes and asparagus by low variability. For the post-war years, however, this association did not appear. The ranking of crops by farm price stability did not change from that of the earlier period, but there was a significant change in the ranking of crops by yield variability.

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[264] Comparable data for long-run trends in fruit yields and prices are not available, but it is believed yield variability is greater for fresh fruit than for vegetable crops, see: Carter, H.O., Dean, G.W., "Income, Price and Yield Variability for Principal California Crops and Cropping Systems", Hilgardia, 30:181, Oct. 1960.

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Table 17. Trend in Farm Price and Yield Variability of Selected Fresh Vegetables, 1918-64.

Crop	Yield Variability				Farm Price Variability			
	1918-40	1946-54	1955-64	1946-64	1918-40	1946-54	1955-64	1946-64
	variation coefficient[1]							
Celery	5	4	4	4	18	15	12	13
Lettuce	8	2	3	3	13	11	6	9
Onions	15	6	4	5	45	31	19	29
Green Peas	8	5	8	8	11	6	6	6
Tomatoes	7	2	5	5	13	4	5	5
Asparagus	7	4	4	4	10	2	3	3
Cabbage	15	4	4	4	39	24	9	18
Cantaloupes	8	2	2	2	16	4	9	8

[1]Defined as the standard deviation of annual first differences expressed as a percentage of the mean.

Source: 1918-40 estimates from: Kling, W., "Determination of Relative Risks Involved in Growing Truck Crops", Journal of Farm Economics, Vol. 24, 1942, pp. 695-98. 1946-64 estimates computed from data in Agricultural Statistics, U.S. Department of Agriculture, Statistical Reporting Service, annual.

Table 17. Trend in Farm Price and Yield Variability of Selected Farm Products, 1970-79.

Crop	Yield Variability 1970-79	Yield Variability 1960-69	Yield Variability 1950-59	Farm Price Variability 1970-79	Farm Price Variability 1960-69	Farm Price Variability 1950-59	Correlation coefficient
	---percent---						
Corn	17	15	14	14	14	14	2
Soybeans	14	12	11	17	15	14	3
Wheat	15	14	13	16	14	13	3
Oats	16	15	14	15	14	13	3
Barley	15	14	13	16	14	13	3
Sorghum	17	15	14	15	14	13	3
Cotton	14	13	12	18	16	15	2
Rice	13	12	11	19	17	16	2
Peanuts	12	11	10	20	18	17	2
Potatoes	18	16	15	13	12	11	4
Tobacco	11	10	9	21	19	18	1
Sugarbeets	10	9	8	22	20	19	1
Sugarcane	9	8	7	23	21	20	1

Indicated as the standard deviation of annual first differences expressed as a percentage of the mean.

Source: Jasmund, Edward C. Yield and Price Variability: Measurement and Characteristics. Economic Research Service, U.S. Department of Agriculture, Agricultural Economic Report No. 462, 1981. 37 pp.

Whereas celery yields were most stable in the 1918-40 period, the relative stability of celery yields increased by the 1946-64 period. The relative yield stability of tomatoes and green peas as well improved over this period. In contrast the stability of lettuce and cantaloupe yields declined relative to the other crops.

The observed reductions in yield variability over this long-run period are a product of improved seed strains, cultivation practices and perhaps also the geographic concentration of crop production into those areas of the country enjoying a climatic comparative advantage. The accompanying unanimous reductions in crop farm price variability, as it is measured in Table 17, support the supply-induced hypothesis of farm price variations.

The changing association of farm price stability and yields is made more explicit by examining post-war trends. Comparison of price and yield stability trends for the period 1946-54 and 1955-64 suggest a breaking down of this association. In particular, the farm price variability of cantaloupes increased over these two periods despite no change in the variability of yields. The price variability of celery, cabbage and lettuce declined with no significant change in yield variability. And there was no change in the variability of farm prices for peas and tomatoes while yield variability increased. This period analysis averages data for a number of producing areas and neglects the timing of changes in yields having a significant influence on output and prices without affecting the aggregate data. It cannot be conclusive but is suggestive of changed production and, perhaps, marketing conditions in the post-war period relative to earlier periods.

Of the crops listed in Table 17 only onions and asparagus exhibited

Whereas celery yields were most stable in the 1919-42 period, the relative stability of celery yield increased by the 1947 - 71 period. The relative yield stability of tomatoes and green peas as well improved over this period. In contrast the stability of lettuce and cantaloupe yields declined relative to the other crops.

The observed reductions in yield variability over the long-run period are a product of improved seed strains, cultivation practices and perhaps also the geographic concentration of crop production into those areas of the country enjoying a climatic comparative advantage. The accompanying enormous reductions in crop farm price variability, as it is measured in Table IV, support the supply-induced hypothesis of farm price variations.

The changing association of farm price stability and yields is made more explicit by examining post-war trends. Comparison of price and yield stability trends for the period 1946-64 and 1965-69 suggest a breaking down of this association. In particular, the farm price variability of cantaloupes increased over these two periods even the no change in the variability of yields. The price variability of celery, cabbage and lettuce declined with no significant change in yield variability. And there was no change in the variability of farm prices for peas and tomatoes while yield variability increased. This period analysis averages data for a number of producing areas and reflects the timing of changes in yields having a significant impact on output and prices without affecting the aggregate data. It cannot be construed but is suggestive of changed production and, perhaps, marketing conditions in the post-war period relative to earlier periods.

Of the crops listed in Table IV only onions and asparagus ed

the expected relations; for the former both price and yield variability declined, and there was no post-war change in either measure of variability for the latter. With the exception of these crops, changes in yield variability were not sufficient to explain changes in farm price stability of the crops listed in Table 17. Table 17 does not indicate what changes occurred in the post-war period which weakened the relation of farm price stability and yields. The possibility of a change in the demand elasticity at farm level for these crops was not investigated. The table does suggest these changes affected the yield-price stability differently for the various crops. Whatever the change it has not had an unequivocal effect on the farm price stability of individual fresh vegetable crops; in Table 17 farm price variability declined for four crops, increased for one, and did not change for three in the post-war period - for the most part despite opposite changes or the lack of a change in yield variability.

Table 18 presents estimates of a number of measures of farm market stability in the post-war years for the crops in question. As in the previous table the measure of variability is adjusted by the long-term mean of the observations so that the measures are comparable by crops despite different units of measurement.

Relative to the other crops all measures of variability were highest for onions over the 1946-64 period. In contrast all measures were relatively stable for fresh tomatoes over the period. Comparing the 1946-54 and 1955-64 periods, only the farm price variations of tomatoes increased, and this was prompted by increased variability of acreage and yields for this crop. This trend toward less stable prices for fresh tomatoes was not accompanied by increased output

prices for fresh tomatoes was not accompanied by increased output acreage and yields for this crop. This trend toward less stable tomatoes increased, and this was propelled by increased variability of the 1914-44 and 1921-44 periods, only the farm price variations of were relatively stable for fresh tomatoes over the period. Comparing highest for onions over the 1914-44 period. In contrast all measures despite different units of measurement.

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Table 13 presents estimates of a number of measures of farm market changes or the lack of a change in yield variability.

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Table 18. Trends in Alternative Measures of Farm Level Variability for Selected Fresh Fruits and Vegetables, 1946-64.

Crop	Years	Acreage	Production	Yield	Farm Price	Farm Value	Unharvested Production
		Variation coefficient[1]					
Carrots	1946-64	5.7	4.6	3.9	9.1	7.7	112.3
	1946-54	6.3	5.1	4.3	11.1	9.9	57.3
	1955-64	4.8	3.5	3.7	5.8	4.5	211.5
Celery	1946-64	5.4	3.5	4.0	13.3	10.2	121.5
	1946-54	6.4	4.4	3.7	15.2	9.9	72.3
	1955-64	4.2	2.6	3.9	12.1	10.3	153.7
Lettuce	1946-64	3.6	3.0	2.8	9.1	8.1	107.6
	1946-54	4.1	3.1	2.3	11.0	10.0	105.7
	1955-64	3.1	2.9	3.2	6.4	7.0	85.1
Onions	1946-64	8.7	7.9	5.0	29.2	21.9	109.4
	1946-54	8.3	8.9	6.0	31.4	27.7	109.6
	1955-64	3.9	4.7	4.4	18.5	14.0	91.8
Tomatoes	1946-64	3.5	3.2	4.8	5.1	7.7	251.6
	1946-54	1.6	3.1	2.5	4.4	5.4	89.1
	1955-64	5.0	3.1	5.1	5.2	8.4	292.4
28 Major Vegetables	1946-64	3.2	2.6	2.3	6.3	3.9	49.0
	1946-54	3.9	3.3	2.3	7.7	5.4	44.6
	1955-64	1.4	1.8	2.3	4.2	2.2	38.9
Apples	1946-64	NA	6.6	NA	8.0	NA	NA
	1945-54	NA	5.7	NA	10.7	NA	NA
	1955-64	NA	6.1	NA	9.3	NA	NA
Peaches	1954-64	NA	NA	NA	7.6	NA	NA

[1]Defined as the standard deviation of annual first differences expressed as a percentage of the mean.

Note: Acreage production and prices are primary observations; yield and value estimates are derived from primary observations. Production includes some quantities not marketed because of low prices or other economic factors. These abandoned quantities are omitted from income estimates.

Source: Agricultural Statistics, U.S. Department of Agriculture, Statistical Reporting Service, annual.

Table 18. Terms in Affirmative Sentences of Two Texts Varying for Speech Act Type and Grammatical Person

Code	Type	Average Length	Production Latency	Verb Latency	Pause Time	Duration	Pitch Range	Loudness	Pitch Contour
Carter	Self-Disclosure	5.4	1.7	3.4	1.9	5.4	0.7	NA	Falling
Jones	Self-Disclosure	5.4	1.5	3.4	1.9	5.4	0.7	NA	Falling
Carter	Self-Disclosure	5.4	1.5	3.4	1.9	5.4	0.7	NA	Falling
Jones	Self-Disclosure	5.4	1.5	3.4	1.9	5.4	0.7	NA	Falling
Carter	Self-Disclosure	5.4	1.5	3.4	1.9	5.4	0.7	NA	Falling
Jones	Self-Disclosure	5.4	1.5	3.4	1.9	5.4	0.7	NA	Falling
Carter	Self-Disclosure	5.4	1.5	3.4	1.9	5.4	0.7	NA	Falling
Jones	Self-Disclosure	5.4	1.5	3.4	1.9	5.4	0.7	NA	Falling
Carter	Self-Disclosure	5.4	1.5	3.4	1.9	5.4	0.7	NA	Falling
Jones	Self-Disclosure	5.4	1.5	3.4	1.9	5.4	0.7	NA	Falling
Carter	Self-Disclosure	5.4	1.5	3.4	1.9	5.4	0.7	NA	Falling
Jones	Self-Disclosure	5.4	1.5	3.4	1.9	5.4	0.7	NA	Falling
Carter	Self-Disclosure	5.4	1.5	3.4	1.9	5.4	0.7	NA	Falling
Jones	Self-Disclosure	5.4	1.5	3.4	1.9	5.4	0.7	NA	Falling
Carter	Self-Disclosure	5.4	1.5	3.4	1.9	5.4	0.7	NA	Falling
Jones	Self-Disclosure	5.4	1.5	3.4	1.9	5.4	0.7	NA	Falling
Carter	Self-Disclosure	5.4	1.5	3.4	1.9	5.4	0.7	NA	Falling
Jones	Self-Disclosure	5.4	1.5	3.4	1.9	5.4	0.7	NA	Falling
Carter	Self-Disclosure	5.4	1.5	3.4	1.9	5.4	0.7	NA	Falling
Jones	Self-Disclosure	5.4	1.5	3.4	1.9	5.4	0.7	NA	Falling
Carter	Self-Disclosure	5.4	1.5	3.4	1.9	5.4	0.7	NA	Falling
Jones	Self-Disclosure	5.4	1.5	3.4	1.9	5.4	0.7	NA	Falling

Note: Averages are based on 20 affirmative sentences for each speaker in each text. Production latency is the time between the end of the previous speaker's turn and the beginning of the sentence. Verb latency is the time between the beginning of the sentence and the beginning of the verb. Pause time is the total duration of pauses within the sentence. Duration is the total duration of the sentence. Pitch range is the difference between the highest and lowest pitch in the sentence. Loudness is the average loudness of the sentence. Pitch contour is the direction of pitch change at the end of the sentence.

Source: Adapted from Pittenger, Hockett, & Danehy, 1960, p. 9, Department of Psychology, Syracuse University, Syracuse, New York.

variations even though acreage and yield variations increased. Another comparison of interest in Table 18 is the trend toward more stable fresh apple prices despite that toward less stable annual production.

For every crop in Table 18 the post-war trend in farm price - greater stability with the exception of fresh tomatoes - followed the trend in acreage stability. It was indicated previously the relative importance of the two components of output variability, yield and price changes, provides an indication of the contribution of unexpected changes in output and changes resulting from producer acreage decisions or the integration of shippers into fresh fruit and vegetable production. Table 18 indicates a stronger relation between acreage and farm price stability than between yield and price variations. For example, farm price variations of celery and lettuce declined in the post-war period, along with acreage variability, in spite of increased yield variability. According to Table 15 these two crops rank high in the geographic concentration of production and shipping point integration of marketing and production. The concentration of production, increasing the vulnerability of the crops to similar climates, diseases, and freezes, is one explanation for the increased yield variations of the crops. But the stabilizing influence of shipping point integration and physical proximity of producers and shippers was apparently sufficient to offset this source of variation and foster more stable farm prices.

A ranking of the crops in Table 18 by the various measures of farm market stability is given in Table 19. The crop rankings by farm price and output variability are of particular interest to the hypothesis of supply-induced farm price variability. Use of first differences

cents of supply-induced farm price variability. Use of first differences price and output variability are of particular interest to the hypothefarm market stability is given in Table 19. The crop rankings by farm

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Table 19. Rankings of Selected Fresh Fruits and Vegetables by Measures of Farm Market Stability, 1946-64.

	Variability Coefficients[1]					
	Farm Price	Farm Value	Crop Output	Yield	Acreage	Unharvested Output
	rank					
Lettuce	3	3	6	5	4	5
Tomatoes	7	4	5	2	5	1
Apples	5	-	2	-	-	-
Peaches	6	-	-	-	-	-
Onions	1	1	1	1	1	4
Celery	2	2	4	3	3	2
Carrots	4	5	3	4	2	3

[1]Defined as the standard deviation of annual first differences expressed as a percentage of the mean

Source: Table 18.

Table 17. Rankings of Selected Fresh Fruits and Vegetables by Measures of Farm Market Stability, 1946-47.

	Variability Measure[1]					
	Farm Price	Farm Value	Crop Output	Yield	Acreage	Unadjusted Farm Price
	Rank					
Lettuce	3	3	6	5	4	5
Tomatoes	7	4	5	2	5	1
Apples	5	-	2	-	-	-
Peaches	6	-	-	-	-	-
Onions	1	1	1	1	1	4
Celery	2	2	4	3	3	2
Carrots	4	5	3	4	2	3

[1] Defined as the standard deviation of annual first differences expressed as a percentage of the mean

Source: Table 12.

in computing the variation coefficients in Table 18 eliminates the different demand elasticities of the crops as considerations in comparing the variability measures in Table 19. The rank correlation between crop output and farm price variability is not high. The relatively high output and price variability for onions and stable output and prices for fresh tomatoes are evidence in support of the hypothesis of supply related price instability.[265] But the contrary is indicated by celery and lettuce, two crops having relatively high rankings in price variability and low rankings in output variations. For apples as well, the relatively high degree of output variations did not translate into extreme price variations.

Other relationships emerge from Table 19. For the most part there is a close agreement between the crop rankings by output, yield and acreage variations. Tomatoes are an exception to this, having relatively high yield variations which do not translate into high output and price variability, presumably because of changes in crop abandonment. In Chapter 4 it was indicated crop abandonment in general was a reaction to market prices rather than an active force on the price making process; however, this generalization does not appear to hold for tomatoes. It would appear valid for onions, a crop having relatively low variations in unharvested production despite high variations in output and farm prices. Finally, an inverse relationship of crop perishability and acreage and output variations is apparent from Table 19. Lettuce and tomatoes, the two most perishable crops presenting the

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[265] Table 15 indicates the output and price variability of onions may be related to the geographic dispersion of production and the low degree of production-marketing integration.

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greatest marketing risk, were marked by relatively low levels of output and acreage variations. This suggests the evolution of stable production enterprises to offset the marketing risks of the more perishable fresh fruit and vegetable crops; according to Table 15 the integration of production and marketing may be one aspect of this economic adjustment.

In summary the economic organization of the fresh fruit and vegetable industry does not permit a distinct separation of supply and demand characteristics influencing farm price stability. The attempt to isolate supply characteristics from the influence of final demand and the marketing sector is unsatisfactory. However, the attempt was instructive for its indication of crop characteristics which might be associated with this instability, some of which are representative of the marketing system for fresh fruits and vegetables. Pure supply and demand characteristics do not exist when there is widespread integration of the production and marketing sectors, when there are institutions in the market place which contribute to the instability of farm prices or undermine producer attempts to stabilize prices, when there are marketing efforts unrelated to the state of factor markets, and when other market characteristics contribute to a farm price which is so unstable as to further misallocate resources and magnify the farm price variability.

For the time intervals over which comparisons were made there were crops supporting the supply-induced hypothesis of market stability and other crops for which there was a suggestion of a breakdown in the relationship of yield and farm price variability. For all crops,

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For the time intervals over which comparisons were made there
were crops supporting the supply-induced hypothesis of market stability
and other crops for which there was a suggestion of a breakdown in the
relationship of yield and farm price variability. For all crops,

acreage variability was more closely related to price variations than yield variability. Whether or not this acreage variability was caused principally by shipper integration into production operations and the financing of producers by shippers or by the isolated acreage decisions of independent producers is not clear. But the relative importance of these acreage variations does not support the hypothesis that price variations are principally the result of unexpected changes in output as measured by yield variations. The evidence is that other forces in addition to these are influencing this price instability.

Demand Elasticity and Farm Price Instability. The most common recognition of an interaction between the market sector and agricultural price stability concerns the relationship of farm and retail demand elasticities in view of the former's status as a derived demand. The marketing margin, consisting of costs and prices at each of the fresh fruit and vegetable market levels, exerts a significant influence on farm price elasticity, hence stability. It is this total contribution of the marketing sector to the relative price stability of the crops studied which is of interest here.

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depends upon the resulting size and form of the margin.[266] The retail demand function determines the upper limit of the demand elasticity at farm level, and the divergence between the elasticities at these two levels is a function of the size and form of the margin.[267] This has the effect of shifting the source of demand elasticity at farm level from the substitution of products in trade and consumption to a series of marketing decisions affecting enterprise combination, costs, prices, and margin strategies. There are institutional and competitive limits to these decisions, of course, but they are nonetheless decisions made in the market sector with varying degrees of discretion.

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[266] For example, see: Shepherd, G.S., Agricultural Price Analysis (Ames, Iowa: Iowa State University press) 1963, 5th ed., p. 62. Shepherd emphasizes the effect of the size of the marketing margin on farm price elasticity and stability. Emphasis is given in what follows to the form of the margin. A more complete analysis would consider the contribution of both the size and form of the margin to farm demand elasticity. The justification for abstracting from the effect of the size of the margin here rests on the assumption that there is greater discretion in the decisions surrounding margin form than margin level. In addition the interdependence of crop margin levels when variable price merchandising is practiced at the retail level makes it difficult to observe independent changes in the level of crop margins. Finally, the divergence in farm-retail demand elasticities may contribute to the size of the margin; Kenneth Ogren has suggested the difference between farm and retail price elasticities of demand is one explanation for not only the greater price variability at farm level but also the declining farm share of the consumer's food dollar: "Marketing Costs, Farm Prices and the Farmer's Share", Policy for Commercial Agriculture, Joint Economic Committee of the Congress, 1957, p. 252.

[267] See: Foote, R.J., Analytical Tools for Studying Demand and Price Structures, U.S. Department of Agriculture, Agricultural Marketing Service, Agricultural Handbook No. 146, Aug. 1958, p. 24. Only linear demand functions are considered in the present study. These are sufficient to indicate the intended contribution of the marketing sector to farm price instability via the effect of the marketing margin on farm price elasticity. But curvilinear functions can be constructed such that appropriate margin forms will result in a more elastic demand at the farm level than at retail level. And retail variable price merchandising could produce these margin forms, though there is no reason why this must be the result of this pricing strategy.

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Retail and farm price flexibilities for the seven crops studied are given in Table 20. For comparative purposes, estimates of farm level demand elasticities are also provided in the table. The results of these computations were not entirely satisfactory; the significance levels of some of the net regression coefficients for per capita consumption were quite low.[268] Annual data was used for computing the price flexibilities for the 1946-64 period; and the studies for which the estimates of farm price elasticities are drawn employed annual price and quantity post-war data. The signs for some coefficients, for example per capita consumption of lettuce and onions, are unacceptable. But for these regression equations with acceptable significance levels and signs, the results are as expected: prices are more stable at the retail than the farm level. But the difference in stability between the two levels as measured by the ratio of retail to farm price flexibility varies considerably from .60 for apples to .97 for peaches.

In general the measures of farm price flexibility are in agreement with the earlier findings with respect to the relative price variations of the crops. Tomatoes, the crop characterised by the smallest annual price and income variations over the 1946-64 period, rank second to lettuce in price elasticity; the low price elasticity of onions is accompanied by relatively large farm price variations. But the

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[268] The poor results obtained are due in part to the use of a single equation approach when simultaneous equations are called for. The latter should be used when the dependent variable, price, is known to affect the consumption of the crop. Price affects consumption through the substitution effect and the affect of price on harvest, hence consumption, when consumption is computed using the disappearance method. Shuffett tested the applicability of single equation techniques for demand estimation of a number of crops and suggested simultaneous equations for lettuce and onions, the two crops for which the signs are unacceptable in Table 20. op. cit.

Retail and farm price flexibilities for the seven crops studied are given in Table 20. For comparative purposes, estimates of farm level demand elasticities are also provided in the table. The results of these computations were not entirely satisfactory; the significance levels of some of the net regression coefficients for per capita consumption were quite low.[26] Annual data was used for computing the price flexibilities for the 1924-41 period; and the studies for which the estimates of farm price elasticities are drawn employed annual price and quantity post-war data. The signs for some coefficients, for example per capita consumption of lettuce and onions, are unacceptable. But for those regression equations with acceptable significance levels and signs, the results are as expected:prices are more elastic at the retail than the farm level. But the difference in stability between the two levels as measured by the ratio of retail to farm price flexibility varies considerably from .60 for apples to .97 for peaches.

In general the measures of farm price flexibility are in agreement with the earlier findings with respect to the relative price variations of the crops. Tomatoes, the crop characterized by the smallest annual price and income variations over the 1924(-41 period, rank second to lettuce in price elasticity; the low price elasticity of onions is accompanied by relatively large farm price variations. But the

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Table 20. Farm and Retail Price Flexibilities and Farm Price Elasticities for Selected Fresh Fruits and Vegetables, 1946-64.

Crop	Market Level	X_o	Per capita Consumption	Per capita Income	R^2[1]	Price Flexibility[2]	Price Elasticity[3]
Apples	farm	11.439	-0.215*	-0.001	.60	-0.972	.70-.79
		(2.670)	(0.064)	(0.001)			
	retail	22.755	-0.445*	0.002	.89	-0.667	
		(3.992)	(0.095)	(0.001)			
Tomatoes	farm	16.540	-0.898*	0.002*	.18	-0.875	.97
		(6.007)	(0.668)	(0.001)			
	retail	31.667	-2.038*	0.010*	.85	-0.715	
		(6.948)	(0.773)	(0.001)			
Carrots	farm	7.981	-0.367	0.001*	.16	-0.692	.30-.40
		(3.431)	(0.357)	(0.001)			
	retail	18.236	-1.244	0.002*	.57	-0.680	
		(10.15)	(1.057)	(0.002)			
Peaches	farm	7.316	-0.245	-0.001*	.81	-0.709	.67
		(0.869)	(0.057)	(0.0004)			
	retail	28.478	-1.484*	0.0004	.90	-0.708	
		(2.779)	(0.181)	(0.001)			
Onions	farm	0.776	0.279	-0.0002	.02	0.884	.28-.39
		(5.361)	(0.578)	(0.0009)			
	retail	-3.243	0.693	0.003*	.51	0.778	
		(7.165)	(0.772)	(0.001)			
Lettuce	farm	8.484	0.085	-0.001	.07	0.170	1.00+
		(1.716)	(0.198)	(0.001)			
	retail	9.337	0.115	0.006*	.81	0.089	
		(2.529)	(0.292)	(0.002)			

Table 20. Farm and Market Price Elasticities and Farm Price Elasticities of Selected Fresh Fruits and Vegetables, 1964-74

Group	Market Level	X_0	Per capita Income	B_{ss}	Marketing Margin	Farm Price	Marketing Margin	Farm Price
Apples	Farm	897.0 (11.5)	(000.0) 000.0	.69	-.20 (.02)	-.47 (.02)	-.10 (.02)	-.59 (.02)
	Retail	1,149.0 (10.2)	(000.0) *000.0					
Bananas	Farm	8.4 (1.1)	(000.0) 000.0	.10				
	Retail	10.7 (1.0)	(000.0) 000.0					
Cantaloupes	Farm	10.2 (.9)	(000.0) *000.0	.18	-.58 (.04)	-.52 (.04)	-.15 (.04)	-.67 (.04)
	Retail	15.2 (.8)	(000.0) *000.0					
Grapefruit	Farm	16.3 (.7)	(000.0) *000.0	.25	-.52 (.04)	-.48 (.04)	-.13 (.04)	-.61 (.04)
	Retail	21.4 (.6)	(000.0) *000.0					
Grapes	Farm	4.3 (.8)	(000.0) *000.0	.13	-.60 (.04)	-.47 (.04)	-.17 (.04)	-.64 (.04)
	Retail	6.1 (.7)	(000.0) *000.0					
Oranges	Farm	16.0 (.5)	(000.0) *000.0	.20	-.58 (.04)	-.52 (.04)	-.16 (.04)	-.68 (.04)
	Retail	21.3 (.5)	(000.0) *000.0					
Peaches	Farm	3.2 (.7)	(000.0) *000.0	.15	-.60 (.04)	-.47 (.04)	-.17 (.04)	-.64 (.04)
	Retail	4.5 (.6)	(000.0) *000.0					
Pears	Farm	2.1 (.7)	(000.0) *000.0	.12	-.61 (.04)	-.47 (.04)	-.17 (.04)	-.64 (.04)
	Retail	3.0 (.6)	(000.0) *000.0					
Pineapples	Farm	2.4 (.8)	(000.0) *000.0	.14	-.59 (.04)	-.48 (.04)	-.16 (.04)	-.64 (.04)
	Retail	3.4 (.7)	(000.0) *000.0					
Tangerines	Farm	3.1 (.8)	(000.0) *000.0	.17	-.58 (.04)	-.49 (.04)	-.16 (.04)	-.65 (.04)
	Retail	4.4 (.7)	(000.0) *000.0					
Watermelons	Farm	8.4 (.9)	(000.0) *000.0	.16	-.58 (.04)	-.49 (.04)	-.15 (.04)	-.64 (.04)
	Retail	11.8 (.8)	(000.0) *000.0					

Table 20. Con't.

Celery	farm	10.497 (9.320)	-0.683 (0.841)	-0.001 (0.002)	.12	-1.150		.62
	retail	26.842	-1.268	-0.002	.13	-0.619		

[1]Coefficient of multiple determination.

[2]Price flexibilities are elasticities of prices with respect to quantities, income held constant. They are computed by multiplying the ratio of average per capita consumption to average price (farm or retail) by the regression coefficient for per capita consumption.

[3]From: Fox, K.A., "Factors Affecting the Farm Income, Farm Prices and Food Consumption", Agricultural Economics Research, July, 1951, pp. 65-86; Waugh, F.V., Demand and Price Analysis, U.S. Department of Agriculture, Economic Research Service, Technical Bulletin No. 1316, Nov. 1964, p. 34; Brandow, G.E., Interrelations among Demands for Farm Products and Implications for Control of Market Supply, Pennsylvania Agricultural Experiment Station Bulletin No. 680, Aug. 1961, p. 40; Shuffett, D.M., The Demand and Price Structure for Selected Vegetables, U.S. Department of Agriculture, Technical Bulletin No. 110, 1954, p. 21.

Sources: Retail prices from the U.S. Department of Labor, Bureau of Labor Statistics. Farm prices from the Statistical Reporting Service, U.S. Department of Agriculture. Per capita consumption data from the Economic Research Service, U.S. Department of Agriculture. Per capita income data from the U.S. Department of Commerce.

* indicates significant at the .10 level, two-tailed test.
(standard errors in parenthesis)

Table 20. Cont'd.

Category	Farm		Nonfarm		Total	
	Retail	Wholesale	Retail	Wholesale	Retail	Wholesale
Corporate Structure	25.8%	7.4%	20.7%	7.1%	24.2%	7.2%
	(0.884)	(0.000)	(0.884)	(0.000)	(0.884)	(0.000)

Concentration of multiple establishments.

Private Ownership are establishments of private individuals with receipts of $100,000 or more per quarter. Income held confidential by the respondent for the tests of average concentration. Tax (Farm or Nonfarm) are combined by multiplying the tests of average concentration.

Source: "Agricultural Concentration." Farm Income and Food Consumption, Agricultural Economics Research, July 1971, Vol. 23, No. 3, pp. 34-39. U.S. Department of Agricultural Economics. Economic Research Service, Technical Bulletin No. 1431, Nov. 1970. p. 34: Hornbrook, C.E. Agricultural Economics Research Service, Technical Bulletin No. 1431, Nov. 1970. p. 34: Hornbrook, C.E. Interrelationships among Demands for Farm Products and Implications for Control of Market Structure. Agricultural Economics Research Service, Technical Bulletin No. 1431, Nov. 1970. p. 34: Hornbrook, C.E. Price Structure for Selected Vegetables. U.S. Department of Agriculture, Technical Bulletin No. 1100, 1954. p. 21.

Retail prices from the U.S. Department of Labor, Bureau of Labor Statistics. Farm prices data from the Statistical Reporting Service, U.S. Department of Agriculture. Per capita consumption data from the Economic Research Service, U.S. Department of Agriculture. Per capita income data from the U.S. Department of Commerce, two-digit SIC level, one-digit year.

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(Standard error in parentheses)

relatively high price elasticity of lettuce was not matched with relative price stability. Nor does the elasticity of demand for peaches explain the post-war price stability of that crop. One reason for these results is that the elasticity of farm demand is a function of the form of the marketing margin which in turn varies with the quality of the marketing effort and the price adjustments at retail occasioned by forward competition and retail variable price merchandising. That is, the crop rankings by price stability and elasticity of demand lack total agreement because market conduct shifts these elasticities rather frequently, but not to the same extent for all crops.

The relative price flexibilities at farm and retail level given in Table 20 reflect on the one hand the substitution of these crops with others in consumption and on the other hand the different margins for the crops resulting from the substitution of the crops in trade and market pricing strategies. If the marketing and pricing strategy in forward markets is such that the farm-retail marketing margins tend to be relatively constant in absolute dollars, then the derived farm demand is necessarily less elastic than the primary retail demand function. However, if the marketing sector prices the fresh fruits and vegetables so that the margin tends to be a constant percentage of the retail price, the farm demand elasticity will approach the elasticity of demand at retail level.[269] Whether or not farm price instability

[269] This is not to say the marketing sector behaves in a manner designed to influence the form of the marketing margin; it is a price-determined margin, influenced by the manner in which the intermediate marketing sector is compensated for its marketing services and the forward competition of retailers along with consumer responses to price variations. The argument is that the marketing and pricing strategies employed in the fresh fruit and vegetable industry have the unintended effect of resulting in different margin forms, hence price elasticities at farm level.

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can be attributed to conduct in the marketing sector, through its influence on price elasticity, depends on the reasons why the margin is either an absolute or percentage margin and whether there is any discretion in the matter on the part of marketing firms.

Table 21 provides the results of study of the forms of marketing margins for the seven crops under consideration. A regression of the retail price on the farm price using annual time series data for the 1946-64 period was employed to classify the crops into those marked by percentage margins, fixed-absolute margins and those with a combination of these margins. This regression separates the fixed portion of the margin, X_0, from the variable portion, X_1. The margin classification rules consist of the relative contribution of the fixed and variable portions of the margin to the total margin.

According to Table 21 peaches, celery and tomatoes have percentage margins. However, reference to Table 20 price flexibilities will show that only for peaches is this a constant percentage margin. For this crop, the marketing margin is a constant percentage of the retail price so that price elasticity and stability are about equal at farm and retail levels. The margins for celery and tomatoes, while principally of the percentage form, are not such that farm and retail price stability is equal. As shown in Tables 20 and 21 the margin for these crops is such that prices are more flexible at farm than retail level while absolute variations measured by the standard deviation and relative variations measured by the variation coefficient are greater at retail than at farm level.

Margins for onions, lettuce and carrots were judged as fixed-absolute according to the rules for classifying margins in Table 21.

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fluence on price elasticity, depends on the reasons why the margin is

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Table 21. Classification of Marketing Margin Forms for Selected Fresh Fruits and Vegetables, 1946-64.

Margin Form[1]	Crop	X_o	X_1 farm price	R^2	retail price	farm price	retail price	farm price
					--STANDARD-- DEVIATION		--VARIATION-- COEFFICIENT[2]	
Percentage	Peaches	2.72 (.23)	4.36 (.00)	.56	8.61	1.47	.83	.84
	Celery	-3.20 (.79)	3.09 (.32)	.06	7.16	.57	.73	.14
	Tomatoes	-28.91 (.00)	5.49 (.00)	.87	11.29	1.91	.47	.20
Fixed absolute	Onions	4.90 (.00)	1.33 (.00)	.49	1.67	.88	.18	.27
	Lettuce	17.42 (.02)	0.46 (.58)	.02	2.27	.70	.11	.09
	Carrots	11.06 (.01)	0.52 (.62)	.02	1.68	.41	.13	.11
Semi-fixed	Apples	3.16	2.39	.71	2.29	.81	.15	.16

[1]Margins were classified by the regression of farm price on retail price according to the following rules: percentage margin if X_o is zero or negative or $X_1 > 2X_o$; fixed absolute if $X_1 = 1$ or X_1 is negative and X_o positive or $X_1 < 1/3X_o$; semi-fixed if $1/3X_o \leq X_1 \leq 2X_o$. Rules adapted from: Allen, G.R., "The Short-Term Behavior of Distributive Margins on Fruits and Vegetables", The Farm Economist, 8:1-16, 1956.

[2]Standard deviation divided by the mean of observations.

Sources: Retail prices from the U.S. Department of Labor, Bureau of Labor Statistics; farm prices from the U.S. Department of Agriculture, Statistical Reporting Service.

(significance levels in parenthesis)

Table 23. Classification of Marketing Margin Forms for Selected Mixed Fruit Trucks and Vegetables, 1960-64.

Margin Form	Crop	X_0	Farm Price	R^2	Trend	Farm Price	Trend	Farm Price
					-DETAILED-		-VARIATION-	
					DEVIATION		CORRELATION	
Percentage	Peaches	3.72	4.36	.56	8.01	7.47	.63	.48
		(.22)	(.00)					
Cents	Cherry	3.30	3.06	.90	7.45	.57	.73	.54
		(.12)	(.32)					
Percentage	Tomatoes	-.28	5.47	.87	11.23	7.91	.47	.22
		(.00)	(.00)					
Mixed deciduous	Onions	4.90	1.33	.49	7.67	.88	.38	.27
		(.00)	(.00)					
	Lettuce	17.42	0.44	.05	2.27	.07	.11	.01
		(.50)	(.58)					
	Carrots	17.06	0.23	.02	1.68	.41	.13	.11
		(.00)	(.42)					
Semi-fixed	Apples	3.46	2.39	.71	2.29	.81	.45	.36

Margins were classified by the regression of farm price on retail price according to the following rules:
Percentage margin if X_0 is zero or negative or $R^2 < .50$; fixed absolute if X_1 = 1 or X_1 is negative and X_0 positive or $R^2 < .50$; semi-fixed if $1 > X_1 > 0$. Notes adapted from: ALLEN, G.R., "The Behaviour of Distributive Margins and Profits", The Farm Economist, 8:11-26, 1960.

Standard deviation divided by the mean of observations. The Farm Economist, 8:11-26, 1960.

Sources: Retail prices from the U.S. Department of Labor, Bureau of Labor Statistics, Retail Food Prices by Cities, monthly issues. Farm prices from the U.S. Department of Agriculture, Statistical Reporting Service.

(significance levels in parentheses)

These margins would be expected to remain constant in dollar value with changes in farm and retail prices; that is, they are sticky margins. For such a margin, the percentage margin increases with prices. This form of margin for onions resulted in a farm price variation coefficient exceeding that of retail prices. But, unexpectedly, the fixed margin policy for lettuce and carrots produced comparable farm and retail price variation coefficients; for the latter crop, this translated into comparable farm and retail price flexibilities as well. Finally, apple margins were judged to be hybrids of the percentage and fixed margins, and although the farm price flexibility for this crop was considerably greater than the retail price flexibility, the absolute variation in the two prices adjusted by the means was not different.

These results are in agreement with Department of Agriculture studies showing that most farm-retail marketing margins are neither constant percentages nor constant absolute dollars but somewhere between the two.[270] Consequently, farm price elasticities are less than retail elasticities. But they also indicate that some derived farm elasticities are closer to the retail limit than others. Carrots and peaches as measured both by price flexibilities and price variation coefficients have about equal price variation at farm and retail levels. But the price flexibilities of apples, tomatoes, onions, lettuce and celery are considerably greater at farm than at retail. The reasons for these crop differences lie in different pricing and merchandising strategies in the marketing sector.

At the shipping point level because of incomplete exchange arrangements, the farm-F.o.b. marketing margin is largely invariable

[270] Waugh, F.V., Demand and Price Analysis, U.S. Department of Agriculture, Economic Research Service, Technical Bulletin No. 1316, Nov. 1964, p. 20.

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[270] Marsh, F.V., Farm-Retail Price Analysis, U.S. Department of Agriculture, Economic Research Service, Technical Bulletin No. 1316, Nov. 1964, p. 20.

to changes in prices. As noted in Chapter 5 there is some adjustment of the harvesting, packing and selling charges with the size of the crop. But on balance the form of the shipping point margin can be expected to add rigidities to the fresh fruit and vegetable marketing margin. A modified incomplete exchange arrangement is used in the terminal wholesale markets whereby the firm extracts a fixed percentage of the selling price for marketing charges.[271] This has the effect of making the margin a variable one, but as noted previously the importance of this market is declining with the increase in direct marketing from shipping point to retailers. One explanation for the equal farm and retail price flexibilities of peaches and carrots is the geographic dispersion of production of these crops and the resulting continued use of the wholesale terminal markets for most of their sales.

The combined effects of margin forms at the shipping point market and wholesale terminal market are offsetting; the manner of compensation for marketing services in the former introduces a ridigity into the margin, that in the latter, introduces a percentage relation. Brokers operate on both fixed and percentage margins, the former being somewhat more prevalent. These operating methods not only influence price elasticity at the farm level, but future changes in the market organization such as direct marketing and an increased role of the shipping point broker will change that elasticity and price stability.

The margin form at retail level is of particular interest. A.

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[271] Allen, G.R., "The Short-Term Behavior of Distributive Margins on Fruits and Vegetables", The Farm Economist, 8:2,1956.

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[27] Allen, G.R., "The Short-Term Behavior of Distributive Margins on Fruits and Vegetables", The Farm Economist, 8:2,1956.

percentage margin will result in retail price movements of equal percentage magnitude with farm price movements; these percentage margins also cause absolute dollar margins to decrease with prices. Large retail price variations, coupled with absolute margins which decline with prices, are characteristic of crops for which there is interdependence in promotion. This would appear to be the case for peaches, celery and tomatoes in Table 21; their contribution to total store profit and sales compensates for the reduced absolute margin when prices are lowered or put on special. Retail price variations for the crops judged to have fixed or semi-fixed margins, crops for which the absolute margin changes little with price, are much less than those crops marked by percentage margins.

Retailers are often said to be more interested in dollar margins than percentage margins.[272] But the evidence is that the retail margin is a combination of both forms. This would be expected when margins are price-determined and a wide range of pricing strategies are employed at retail. Including the wholesale operations of integrated retail organizations, the retail level accounts for some 60 percent of the fresh fruit and vegetable marketing margin.[273] Dalrymple estimated the total food marketing margin consisted of about 50 percent absolute and 50 percent percentage margin.[274] The greater weight given the retail margin and the equality of the two components resulting indicate

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[272] Super Value Study (New York: Progressive Grocer), 1958, p. s-5.

[273] Cost Components of Farm Retail Price Spreads for Foods, National Commission on Food Marketing, Technical Study, No. 9, June 1966, p. 46.

[274] Dalrymple, D.G., On the Nature of Marketing Margins, Michigan State University, Department of Agricultural Economics, AE 824, April, 1961, p. 6.

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a portion of the retail margin is of the percentage form and that the percentage component of the fresh fruit and vegetable margin is somewhat more important than the absolute component.[275]

Manchester reported finding that retail chainstore organizations typically set target margins of 28 to 33 percent on the average for fresh fruits and vegetables; he attributed crop variations from the departmental target margin to the department's or crop's role in the store's marketing image and strategy as a result of local competition.[276] Other studies cast doubt on this universal margin form. Hoos reported there is tentative evidence that at least for fresh citrus fruits large retailers employ fixed percentage margins while smaller rivals use fixed absolute margins.[277] But Lee found that fresh produce pricing at retail in Pittsburg was not consistent with either the constant percentage or the constant absolute margin hypotheses.[278]

No conclusion as to the form of the marketing margin emerges from these studies. The margin form is a function of the compensatory arrangements in the marketing system, the distribution channel through

[275] See: Shepherd, G.S., Marketing Farm Products - Economic Analysis (Ames, Iowa: Iowa State University Press) 1955, pp. 253-4.

[276] Manchester, A.C., The Structure of Wholesale Produce Markets, U.S. Department of Agriculture, Economic Research Service, Agri. Econ. Rpt. No. 45, April 1964, p. 89.

[277] Hoos, S., "The Behavior of Marketing Margins on Citrus Fruit", Journal of Farm Economics, 34:913, Dec. 1952. Considerable evidence is also reported contradicting the generalization. The percentage margin and large store association is also consistent with the previously mentioned relation between percentage margins and specialing or retail variable price merchandising.

[278] Lee, W.A., Marketing Margins for Selected Fresh Fruits and Vegetables Sold in Pittsburg, July 1950 - Jan. 1951, Pennsylvania State College, Progress Report No. 87, Sept. 1952.

a portion of the retail margin is of the percentage form and that the percentage component of the fresh fruit and vegetable margin is somewhat more important than the absolute component.[275]

Manchester reported finding that retail disinfestore organizations typically set target margins of 28 to 33 percent on the average for fresh fruits and vegetables; he attributed crop variations from the departmental target margin to the department's or crew's role in the store's marketing image and strategy as a result of local competition.[276] Other studies cast doubt on this universal margin form. Hoos reported there is tentative evidence that at least for fresh citrus fruits large retailers employ fixed percentage margins while smaller rivals use fixed absolute margins.[277] But Lee found that fresh produce pricing at retail in Pittsburg was not consistent with either the constant percentage or the constant absolute margin hypotheses.[278]

To conclusion as to the form of the marketing margin ever res from these studies. The margin form is a function of the compensatory arrangements in the marketing system, the distribution channel through

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[275] See: Stephens, G.S., Marketing Farm Products - Economic Analysis (Ames, Iowa: Iowa State University Press) 1955, pp. 252-4.

[276] Manchester, A.C., The Structure of Wholesale Produce Markets, U.S. Department of Agriculture, Economic Research Service, Agri. Econ. Rpt. No. 45, April 1964, p. 89.

[277] Hoos, S., "The Behavior of Marketing Margins on Citrus Fruit", Journal of Farm Economics, 34:213, Dec. 1952. Considerable evidence is also reported contradicting the generalization. The percentage margin and large store association is also consistent with the previously mentioned relation between percentage margins and specialing or retail variable price merchandising.

[278] Lee, W.A., Marketing Margins for Selected Fresh Fruits and Vegetables Sold in Pittsburg, July 1950 - Jan. 1951, Pennsylvania State College, Progress Report No. 77, Sept. 1952.

which the product moves, the integration of the retailing and wholesaling market functions, and the pricing strategy at retail. And that is the very point of the study -- to indicate how the market organization and behavior of the market sector influences farm price stability. In this case the influence is indirect through the derived demand elasticity at farm level. And there are indications that for some crops the form of the margin is such that equal percentage changes result at the farm and retail levels. But there are some crops for which this is not the case; for these, the marketing sector may be said to be a, probably unintentional, source of farm price instability. By the same token, of course, the marketing sector may exert a stabilizing influence on farm prices.

One more point may be made in this regard. There is a reported intra-seasonal shifting of demand toward greater inelasticity for fresh produce as the marketing season progresses. Pasour found the demand for fresh apples became less elastic as the marketing season progressed and more elastic near the end of the season[279] He did not speculate, however, on the reason for this change in elasticity, the existence of which was based on the failure of supplies to explain certain intraseasonal price movements. Similarly, Gassman reported a declining elasticity of demand for fresh California pears with the advance of the marketing season.[280] These observations seem inconsistent with the notion that the demand elasticity of a product

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[279]Pasour, E.C., Jr., "An Analysis of Intraseasonal Apple Price Movements", Agricultural Economics Research, 17:7, Jan. 1965.

[280]Gassman, R.E., Market Analysis of California Fresh Bartlett Pears, California Department of Agriculture, Bureau of Marketing, Marketing Report no. 21, 1966, p. 16.

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[280] Gaston, R.E., Pooled Analysis of California Fresh Pear Prices, California Department of Agriculture, Bureau of Marketing, Marketing Report no. 21, 1956, p. 15.

increases with the number of substitutes in consumption. There is a regularity to the seasonal production of fresh fruit and vegetable crops so that substitute products normally become available near the end of the marketing season for any one crop. It is suggested here the decline in elasticity for crops may be the result of a substitution of a percentage margin for a fixed absolute margin at retail; the motivation for this substitution is that consumers become less responsive to retail variable price merchandising at the end of a season and the crop supply is insufficient for specialing which favors the percentage margin form.

Farm Price Stability and Trends in the Marketing Sector. The conclusion of the first section of this chapter was that pure tests of the supply and demand-induced market instability hypotheses were difficult so interrelated were the two sectors through the market organization of the fresh fruit and vegetable industry. The conclusion of the second section was that farm demand elasticity was responsible for crop variations in market price stability but that the influence of the marketing sector on that elasticity was significant. This section presents the results of an attempt to relate trends in the market organization and behavior of the fresh produce marketing sector to the stability of farm prices.

The preceding chapters suggest a number of hypotheses regarding the possible contribution of market organization and behavior to farm price stability. Some of the hypotheses are operational using currently available data; others must wait for the collection of necessary data for testing. The variables in Table 22 were collected from a number

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Table 22. Selected Variables Representing Trends in the Market Organization and Conduct of the Fresh Fruit and Vegetable Industry.

Variable	Trend
Shipping Point Markets	
Number of fruit and vegetable farms	Number of shipping point supply sources
Annual grower-shipper sales	Extent of integration of production and marketing.
Number of farms/number of assemblers	Shipping point market local monopsony
Shipper/grower-shipper sales	Integration of production and marketing; threats of loss of market for independent shipper and producer
Number of market orders and agreements in effect	Extent of producer control over harvest and flow to market
Shipping point broker-handler sales	Proportion of shipping point sales handled by brokers
Cooperative/other assembler sales	Extent of producer integration into shipping point by the cooperative effort
FLACALTEX handlers/other handlers	Geographic concentration of shipping point marketing firms
Number of multi-unit handlers	Extent of horizontal shipping point integration
Number of shippers handling only one crop	Shipping point crop specialization
Wholesale Terminal Markets	
Vertically integrated shipping point handlers	Extent of integration of the wholesale with the shipping point market
Number of fresh produce merchant wholesalers	Number of terminal market firms
Retail Markets	
Number of retail branch buying offices	Extent of integration of the retailers into shipping points
Assembler retail/wholesale sales	Proportion of shipping point sales direct to retailers and bypassing the wholesale market

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of sources.[281] Each of these substitutes in a very crude manner for the major organizational trends and alterations in market behavior in the fresh fruit and vegetable industry discussed above. None of the variables are available for a specific crop, and as shown previously in relation to shipping point integration there are differences among the crops in the trend and extent of change in organizational characteristics. Nevertheless the assumption of this section is that the changes in the marketing sector are proceeding in the same direction and at an equal rate for the crops studied.

Three statistical problems appear when the variables in Table 22 are related to the stability of farm prices. First, serial correlation is a problem with time series data such as these; and first differences of annual data may not be the appropriate time units for observing the desired changes in the structure of the market. Secondly because of interrelations in market organization, for example direct shipping point sales to retailers and the declining number of firms in the terminal wholesale market, multicollinearity among the variables can arise. Thirdly, annual data is not available for many of the variables, and data interpolation was necessary. Because the number of degrees of freedom in statistical tests is based on the number of independent observations, this interpolation reduces the degrees of freedom for these tests, though not entirely by the number of interpolated observations.

Factor analysis is one statistical technique by which the interrelations of a large number of variables may be studied[282] This

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[281] See Appendix B.

[282] Harman, H.H., Modern Factor Analysis, (Chicago, Ill.: University of Chicago Press) 1960.

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technique was applied to the variables in Table 22 along with the acreage, domestic production, and crop abandonment annual data for a number of fresh fruits and vegetables. Farm price variability, defined as the annual standard deviation of monthly farm prices, was also included as a variable. For the factor analysis, unities were inserted along the principal diagonal of the correlation matrix, the eigenvalue threshold was set at 1.000, and a Varimax rotation of the principal axis solution was performed; for the latter the Kiel-Wrigley criterion was set at 3 factors.[283] Linear combinations of the resulting three factors were associated with 46 percent of the annual intra-seasonal farm price variation of tomatoes and 42 percent of the farm price variation of apples. But the rotated principal axis solutions for the crops selected for factor analysis in general did not meet the criteria of a satisfactory factor analysis; in particular the rotation lacked positive manifold - the property that each variable have a high loading in only one factor and a low loading in the other factors. In addition the factor loadings failed to group variables into economically meaningful factors. Consequently, the detailed results of the factor analysis are not presented here.

Another attempt at statistically relating changes in market organization and the farm price stability of fresh fruits and vegetables involved the use of least squares step-wise deletion regression. This program calculates successive least squares regression estimates, deleting the least significant variable after each estimate. The variables remaining at the termination of the iteration process are those

[283] These factor analysis options are discussed in Cooley, W.W., Lohnes, P.R., Multivariate Procedures for the Behavioral Sciences (New York: Wiley) 1962.

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significant at the predetermined level of significance.

The variables in Table 23 were selected as the independent variates for the stepwise deletion technique. Because it is likely trends in market organization are more constant in percentage than in absolute terms, these independent variables were transformed to logarithms. Annual first differences of logarithms of farm prices were introduced as the dependent variable to eliminate serial correlation. Also, regression analysis of first difference observations extracts the secular trend in farm prices as the constant term in the equation. The net regression coefficients, then are based on annual fluctuations about this trend. Because of the loss of degrees of freedom from the interpolation a minimum significance level of .05 was selected as the criterion for termination of the iteration process.

Table 23 shows the results of the stepwise iteration process for the five fresh vegetable crops studied. Only onions were not marked by a secular farm price trend over the 1946-64 period. The most striking feature of Table 23 is that the trend in domestic production of tomatoes and carrots was not included in the terminating iteration for these two crops. Reference to Table 19 will show that the output variability of tomatoes was low relative to that of the other crops studied over the 1946-64 period while carrots were marked by a rather high output variability. It will be remembered the production of tomatoes and carrots is geographically dispersed relative to the other vegetable crops with the exception of onions. Perhaps the complexity of marketing crops not geographically concentrated into well-developed shipping point markets accounts for the lack of importance of

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Table 23. Relationship of Crop Output and Marketing Trends to the Farm Price Stability of Selected Fresh Vegetable Crops, 1946-64.

	Independent	Least squares net regression coefficients[1]				
		Tomatoes	Onions	Carrots	Celery	Lettuce
X_0	Secular trend	87.0 (27.1)	-63.7 (19.8)[2]	75.2 (19.6)	-160.9 (30.6)	-470.8 (40.5)
X_1	Shipper/grower-shipper sales	45.2 (13.6)	137.7 (9.9)	-8.6 (2.1)	-6.2 (0.9)	
X_2	Number of farms/ number of assemblers		86.0 (2.7)			55.1 (4.6)
X_3	Number of market orders and agreements	-14.5 (1.5)	-70.5 (4.1)		16.0 (3.2)	-17.3 (2.2)
X_4	Shipping point broker/ handler sales	-17.7 (6.1)	28.8 (1.0)	-6.1 (1.8)		36.9 (3.3)
X_5	Cooperative share of shipping point sales				0.002 (0.0003)	-0.002 (0.0003)
X_6	Proportion of handlers in FLACALTEX		-129.3 (3.8)	15.4 (4.0)		-109.2 (8.7)
X_7	Assembler retail/wholesale sales		-14.1 (0.8)		5.83 (0.9)	
X_8	Proportion of handlers integrated into wholesaling		84.6 (2.3)	-9.7 (2.4)		58.5 (4.8)
X_9	Domestic production		-0.0004 (0.00001)		-0.0005 (0.00005)	-0.001 (0.0001)
Coefficient of multiple determination		.85	.99	.79	.98	.99

Table 23. Multicollinearity of Corn Output and Marketing Trends to the Farm Price Elasticity of Selected Fresh Vegetable Crops, 1964-84.

Independent	Tomatoes	Head squash	Onions	Carrots	Green peppers	Cantaloupe	Watermelons
X_0 Constant term	87.0	-63.1	75.2	75.2	-160.9	-170.8
	(27.1)	(29.8)	(10.6)	(10.6)	(30.5)	(40.5)
X_1 Shipments\Growers-shipments	45.2	137.1	-3.6	-3.6	-2.5	
	(23.6)	(9.6)	(21.1)	(21.1)	(0.4)	
Number of farms\ number of assembly points		86.0				52.1
		(25.1)				(11.6)
X_2 Number of markets ordered and approached	-34.5	-70.1	-5.2	-5.2	7.0	-17.3
	(3.6)	(11.6)	(3.8)	(3.8)	(3.8)	(25.2)
X_4 Shipping point brokers\ parcel sales	-17.1	28.8	-7.8	-7.8		3.9
	(1.6)	(1.0)	(1.8)	(1.8)		(3.3)
X_5 Cooperative share of shipping point sales		-129.3	15.4	15.4		-209.2
		(3.8)	(1.0)	(1.0)		(1.3)
X_6 Proportion of handlers in PLACATEX		-14.1				
		(0.8)				
X_7 Assembler retail\wholesale sales		61.3		-9.7		58.5
		(3.3)		(2.4)		(4.3)
X_8 Proportion of handlers interested into wholesaling		-0.0001				-0.0021
		(0.0003)				(0.0003)
X_9 Domestic production						
Coefficient of multiple determination	.85	.99	.79		.93	

Table 23. Con't.

[1]Regression coefficients computed using ordinary least squares stepwise deletion regression; minisig. = .05. Dependent variable is the annual farm price variation of the crop defined in terms of first differences of logarithms; independent variables transformed to logarithms. For program description, see: Michigan State University Agricultural Experiment Station, STAT Series Description No. 8, Oct. 11, 1966.

[2]Not significant at the .05 level. All other constant terms and net regression coefficients are significant at the .05 level.

Sources: Farm price data from: U.S. Department of Agriculture, Statistical Reporting Service, Marketing trend data from: Organization and Competition in the Fruit and Vegetable Industry, National Commission on Food Marketing, Technical Study No. 4, June 1966, Chapter 3; U.S. Bureau of the Census. U.S. Census of Agriculture: 1948, 1954, 1958, 1963; Federal and State Enabling Legislation for Fruit and Vegetable Market Orders: Evolution and Current Status, National Commission on Food Marketing, Technical Study No. 4, Supplement No. 1; U.S. Department of Agriculture, Farmer Cooperative Service, Statistics of Farmer Cooperatives, annual.

(standard errors in parenthises.)

Table 23. (Cont'd.)

Regression coefficients computed using natural logarithms of terms and equations denoted by asterisk; minimal = .05. Dependent variable is the annual farm price variation of the corn deflated in terms of first differences of logarithms; University Agricultural Experiment Station, East Lansing, Mich. Special Series No. 9, Oct. 11, 1956.

Zero significant at the .05 level. All other coefficient terms are significant at the .05 level.

Sources: Farm price data from: U.S. Department of Agriculture, Statistical Reporting Service, Agricultural Prices, annual summaries, 1924-1955. Corn production data from: Crop Reporting Board, Statistical Reporting Service, U.S. Department of Agriculture, Crop Production, annual summaries, 1924-1955. Carryover data from: Commodity Stabilization Service, U.S. Department of Agriculture, Statistical Bulletin No. 177, Feed Grain Summary and Outlook, Supplement for 1956, Nov. 1956, p. 2. Index of prices received by farmers from: U.S. Department of Agriculture, Agricultural Statistics, 1955, p. 582. Index of prices paid by farmers from: U.S. Department of Agriculture, Agricultural Statistics, 1955, p. 583.

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production variations for price stability of these crops, but this can be only a tentative hypothesis for an unexpected result.[284]

The second feature of Table 23 is that there is neither a consistency of the signs on the independent variables significant for the various crops, nor is there a similarity of significant variables for any of the crops. Exceptions to this are the domestic production net regression coefficients for which the signs are all negative, indicating that small crops are associated with less stable farm prices, and the variable representing the number of fruit and vegetable farms per assembler. The latter is declining and, according to the signs of the regression coefficients, associated with increasing price stability at farm level for onions and lettuce.[285]

Table 23 indicates that the associations between the marketing sector and the farm price have been both stabilizing and destabilizing. The one exception to this is celery for which the signs of the regression coefficients indicate a destabilizing association between farm prices and the significant marketing variables. As Table 15 shows this crop ranks second in the geographic concentration of production in one state, first in the share of output produced in the states of Florida, California, and Texas and first in the degree of integration of production and marketing. In these respects it is a crop highly sensitive to changes in the market organization.

In general Table 23 indicates the trends in the marketing sector

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[284]It can be noted that domestic production was deleted from the equation for tomatoes on the last iteration; the variable was deleted from the equation for carrots on the second iteration.

[285]An indication of this trend is given in: NCFM, Technical Report No. 4, June 1966, p. 52.

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have been associated with increased farm price stability for onions, tomatoes, and lettuce; market trends have been associated with increased farm price variations of celery and carrots. But the same marketing variables are not significant in this respect for all crops. The measure of shipping point integration of the production and marketing functions was associated with increased price stability of onions and tomatoes and greater price variations of carrots and celery. It was previously indicated this trend would have a dual effect on farm price stability: it forces a reconciliation of pricing and output levels between the shipping point and production sectors and at the same time threatens the market stability of non-integrated supplies. However, crop characteristics discussed previously in the chapter are insufficient for explaining why the destabilizing effect is dominant for celery and carrots while the stabilizing effect dominates for onions and tomatoes.

That a declining ratio of fresh fruit and vegetable farms to number of shippers or handlers was associated with price stabilization for onions and lettuce was expected. There is, however, no indication in Table 15 why this trend is significantly related to these two crops and not the others. This trend not only reduces the local monopsony position of the shipper in assembly markets but is also indicative of fewer sellers in shipping point selling markets. In all liklihood the importance of the weak seller effect declines with this ratio.

One of the stated objectives of state and federal marketing orders and agreements is the encouragement of market activities such as production control and regulation of flow to market in the interest

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of farm price stability.[286] These marketing instruments have been less permanent for the fresh vegetable crops to which they have been applied than is the case for fresh fruits.[287] Nevertheless, according to Table 23 the increased number of market orders and agreements in effect for all fresh produce crops has been associated with price stability for onions, tomatoes and lettuce. These crops have been regulated under a number of state and federal market orders and agreements in the states of Florida, Texas, and California in the post-war period.

Florida produces some 52 percent of the celery supplies, and the federal and state marketing orders regulating this crop in terms of producer entry and total quantities marketed are among the most stringent of market instruments.[288] Base quantitites and market allotments for Florida celery are negotiable and transferable under these instruments, and the control they provide over total supply and flow to market is unique for fresh vegetable crops. For this reason, it is difficult to interpret the destabilizing association of celery farm prices and the number of orders and agreements in effect.

Shipping point brokers it was noted earlier would be expected to exert a stabilizing force on farm market prices to the extent they facilitate the matching of buyers and sellers in shipping point markets and a destabilizing effect through their fixed charges per unit for marketing services. Table 23 indicates the trend toward a declining

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[286] NCFM, Technical Report No. 4, June 1966, p. 287.

[287] Ibid., 334.

[288] Ibid., pp. 322-328.

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[224] USDA, Technical Report No. 4, June 1946, p. 27.

[225] Ibid., 32.

[226] Ibid., pp. 322-324.

ratio of broker to other shipping point sales has been associated with price stability for onions and lettuce, price instability for carrots and tomatoes. The confrontation of producer and shipping point output and pricing conflicts in the fresh fruit and vegetable marketing cooperative was mentioned earlier as a factor in farm price stability of these crops. The variable representing the importance of cooperatives in shipping point markets was significant for only celery and lettuce; however cooperatives are active in the other vegetable crops studied. The share of shipping point sales by cooperatives was associated with price stability for lettuce and price instability for celery. As Table 15 shows, these crops have much in common, including the importance of the fresh market, geographic concentration of production, and degree of integration of the production and shipping point marketing functions. This suggests that the effect of cooperative establishment and growth on producer price stability is more complex than can be studied here.

Finally Table 23 shows that the effect of direct shipping point sales to retailers and the bypassing of the wholesale terminal markets was significantly associated with only the farm price stability of celery and onions, and the association was stabilizing for the latter and destabilizing for the former. The role of the branch buying office, the shipping point broker, the wholesale terminal market and the integration of the retailing and wholesaling marketing functions are all reflected in this variable and probably account for the lack of consistent results.

In summary the attempt to relate specific trends in the market organization of the fresh fruit and vegetable industry with price stability at the farm level was not entirely satisfactory. There is

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Chapter 7.

SUMMARY, CONCLUSIONS AND POLICY IMPLICATIONS

The objectives of this study put forth in Chapter 1 were to study the extent, sources and manifestations of farm price instability in the fresh fruit and vegetable industry, particularly as these relate to the coordinating role and performance of the marketing sector. It was shown that the farm price variability for these products is appreciably greater than for other farm products, and that the proportion of this variation not of a reoccurring nature is more important for fresh fruits and vegetables than other food products. In addition evidence was presented indicating the farm price variability of fresh fruits and vegetables in general has not changed in the post-war period, despite technical and economic developments reducing the variation of yields and acreage. The trend in price stability for a number of individual fresh fruits and vegetables has been mixed, again despite a general decline in output variability.

Farm price variability was seen to be manifest in a number of ways. Chief among these are the persistence of considerable crop abandonment, external capital rationing, producer attempts to institutionalize market stabilizing mechanisms, and crop diversification. Further, the diverse forms of market organization and enterprise combination found in industry shipping point markets were examined as adjustments to farm price instability on the part of producers and marketing firms. Farm price variability was manifest in production and marketing costs as well. The principal manifestation of farm price instability, the failure of prices as communicating mechanisms

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in the market and the resulting misallocation of resources in production, could not be observed empirically but was judged a significant industry problem.

The frequent integration of the production and marketing sectors in the industry and the influence of the marketing sector's structure and conduct on the prices transmitted to producers and guiding resource allocation in the production and harvesting process make it difficult to segregate the contributions of output variations and changes in the market organization and behavior in the marketing sector to farm price instability. But only moderate support could be gathered for the supply-induced hypothesis of market instability. When output and price variations were examined for a number of crops, the former was not found to be a good indication of the latter. This was taken as an indication of support for the demand-induced hypothesis of market stability.

A number of hypotheses relating to the interaction of the fresh fruits and vegetable production and marketing sectors and the implications for the stability of farm prices were developed from the testimony of witnesses at the National Commission on Food Marketing hearings. The principal finding was the existence of dissonant coordinating institutions and practices presenting the problem of market coordination of the various market levels. One of the major conflicts examined was that between the output and pricing levels of producers and their marketing agents in shipping point markets. This conflict was found to be institutionally based on, first, a unique form of exchange obtaining between producers and shippers, and, second, on

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the partial integration of shippers into production and the maintenance of their position as market agent for independent producers. This conflict was judged to be caused by attempts on the part of shippers to avoid the risk of price fluctuations and have the net effect of increasing the price instability to which the producer of fresh fruits and vegetables is subjected.

Another conflict was found between the retail sector of the market channel and the remainder of the channel. Because of the retailer's multi-product offering and proximity to consumers in the channel and as a result of consumer response to varying pricing and merchandising tactics of the retailer, it was suggested retail pricing and output levels are for the most part unrelated to those obtaining in factor markets. As with the conflict in pricing and output levels at shipping point, it would only be by accident that the price and output levels of buyers and sellers would be in agreement. More typically, there would be a conflict in these pricing and output goals which among other things could be destabilizing to market prices.

The title "residual income claimant" was given to the producers of fresh fruits and vegetables to designate their vulnerability not only to price variations originating in output variations but also to the destabilizing effects of these observed market conflicts. With the largest fixed investment in product, the least capability for making short-term resource adjustments to changes in prices, and the furthest distance from the consumer, the producer either requires price stability or assistance from the marketing sector in the allocation of resources in production. With the present market organization and institutional structure of the industry, the latter does not appear

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forthcoming.

An attempt to quantify relationships between farm price stability of selected fresh vegetables and trends in the market organization of the fresh fruit and vegetable industry produced mixed results. For some crops it was judged the market variables were more important than variations in supplies in explaining farm price fluctuations. But the relationships were not consistent; some market trends appear to be destabilizing to farm prices and others stabilizing. Some of the known crop characteristics believed to influence the reaction of farm prices to change in the market sector, such as perishability, geographic concentration of production, and the extent of production-marketing integration, explained these differences in results. It can only be assumed the relationships are more complex than postulated here.

Though the two objectives are not entirely separable, considerably more was accomplished in the study by way of describing the problem of vertical coordination in a market channel than in separating the contribution of supply and demand characteristics to farm price instability. Conflicting pricing and output goals throughout the channel are a major problem for the industry not previously recognized. And the institutional bases of these conflicts, rooted in the risk-accommodating marketing institutions, were found to be a contribution of the marketing sector to this problem. The failure to quantify this contribution seems less the fault of the problem definition than the quality of data available.

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this risk is not shared equally by all in the channel. Partly because of the institutional structure of the market, this cost falls primarily on the producers, the sector in the least favorable position to make the necessary adjustments to changes in prices and costs at least in the short-run. Improvements in the coordinating role of the marketing sector in this respect appear called for.

The problem of the fresh fruit and vegetable industry is multi-dimensional and a problem of coordination between a number of interacting market levels and firms. Not only are the mechanisms lacking for this task of coordination but there are elements of market structure working in opposition to coordination. These conflicting elements of market organization include exchange arrangements, forms of integration, independence of pricing and cost structures, and the enterprise combinations of shipping point marketing firms. These conflicts operate both to reduce the efficiency of the marketing process and to impede the efficient allocation of resources in production. For these reasons, public policy needs to be directed to the problems outlined in this study.

Policy Implications. From the standpoint of public policy the study had three objectives: (1) to define a policy problem of the interaction of the production and marketing sectors -- farm price stability; (2) to highlight the points of policy leverage in the problem and examine alternative policy measures; and (3) to appraise the policy pronouncements of the National Commission on Food Marketing relative to the problem of farm price stability.

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of policy implications emerging from the study are tempered by the fact that farm price stability, important as it is to the allocation of resources in production and marketing, is only one policy referent whereas economic policy is a compromise of several goals. This abstraction, necessary and appropriate for analytical purposes, is a major limitation to the formation of public policy based on the results of the study. The line between stability and rigidity is such that the net contribution of stabilizing policy to agricultural welfare cannot be determined; nor is the contribution of such policy to competition in the industry certain. Finally one cannot be sure of the desirability of such policy for consumer welfare. Frederick Waugh, for example, has argued the consumers' surplus is reduced if fluctuating prices are stabilized at their mean.[289]

No judgement of farm price stability as a policy goal is forthcoming from the study. On the one hand relative stability is seen as desirable for the rational organization of resources in the production and marketing of fresh fruits and vegetables; the requisite coordination of production and marketing in the absence of stable prices is not to

[289] Waugh, F.V., "Does the Consumer Benefit from Price Instability" The Quarterly Journal of Economics, Aug. 1944, pp. 602-14. Waugh's proof requires only the weak assumption of a downward sloping demand curve; the slope insures that the gain to consumers when prices are below average always exceeds the loss in consumer's surplus when prices are above the average. Hence, the net loss in surplus with stabilization. It has been pointed out the gain in consumers' surplus from price fluctuations would not exist if prices were stabilized at a mean weighted by consumption at each price level: Shepherd, G.S., Agricultural Price Analysis, (Ames, Iowa: Iowa State University Press), 5th ed. p. 191. D.G. Johnson has replied to Waugh that stabilizing prices at the arithmetic mean, while reducing consumers' surplus, would be a net benefit to society neglecting any costs of stabilization since the gain in producers' revenue would more than offset the loss in consumers' surplus: Forward Prices for Agriculture, (Chicago, Ill.: University of Chicago Press) 1947, p. 169.

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be expected under the present institutional structure of the industry. Furthermore there are some explicit costs to the farm price instability such as economic crop abandonment. On the other hand it is recognized a degree of flexibility is needed in the marketing of a highly perishable crop. No one would argue this flexibility should extend to a complete independence between the various market levels, nor is this the case. What might be hoped for is a compromise stability which at one and the same time permits an efficient allocation of resources in long-term decisions and a flexibility in short-term marketing decisions. The development of market institutions which would promote this compromise rather than perpetuate the dilemma should be encouraged.

To the extent agricultural policy has been cognizant of the interaction of the production and marketing sectors and the consequent need for coordination, it has emphasized the dichotomy of production and marketing, sometimes to the degree that the two sectors are viewed as competing rather than complementary. Policy recommendations, including those of the National Commission on Food Marketing, have been oriented toward the probability that the marketing sector unduly influences producer prices or, alternatively, that the encouragement of marketing cooperatives and other grower-based institutions will provide producers the tools for dealing effectively with the larger and more

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concentrated marketing sector.[290] According to this study there are conflicting goals and behavior between the production and marketing sectors, but these are institutionally based, subject to modification, and not nearly so important as the interdependence of the two sectors. It is true the lack of coordination between the sectors puts the producer at a disadvantage in the channel. But this defines two points of policy leverage: increase the coordination of the sectors and provide the producer sector with countervailing instruments.

The choice of these two policy alternatives differs if the problem is conceived in terms of market conflicts in pricing and output levels and lack of coordination between the market levels than if conceived in terms of power positions. Moreover the policy prescription differs if the conflict is seen as institutionally-based rather than an inherent conflict of interest between vertically-related markets. For, there are conceivable institutions which would reconcile the pricing and

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290 For example after comparing the economic position of farmers relative to that of the agricultural supply and processing sectors, Lanzillotti suggests the policy alternatives are to encourage the formation of countervailing power via governmental sanctions or the dissolution of market power held by the supply and processing firms: "The Superior Market Power of Food Processing and Agricultural Supply Firms - Its Relation to the Farm Problem" Journal of Farm Economics, Vol. 42, Dec. 1960, pp. 1228-47. The complaint with this dichotomy of policy alternatives, aside from the difficulty of defining and maintaining a balance of market power, is that the performance of a system of countervailance, like a stalemate in war, is not an acceptable alternative for those in the system. Breimyer has argued the benefits of countervailing power are grossly overestimated in agriculture; Markets, Market Structure and the Institutional Organization of Agriculture, lectures delivered at Texas A&M University, College Station, Texas, Mar. 11-13, 1963. And it has been observed that forms of countervailing power more often reinforce than neutralize market power, thus requiring the addition of a third power to protect the public interest. See: Ulmer, J., "Some Reflections on Economic Power and Economic Theory" De Economist No. 5, MEI 1959, pp. 337-46.

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output conflicts, though these are not given attention when interest focuses on the market power problem. And institutionally-based conflicts can be modified more easily than inherent economic conflicts.

Most important of all, the policy prescription for price stabilization at farm markets depends on the presumed source of the instability. In his classic book on the subject Schultz examined five means of reducing farm market instability: technological improvements such as drought resistant seed strains, crop insurance, storage, stabilization of the non-farm economy, and compensatory stabilizing payments.[291] Admittedly these recommendations were not put forth specifically for the fresh fruit and vegetable industry, but similar ones have been made for this industry. Yet none of these seems appropriate to the problems described in this study; they assume the instability has its source entirely in supply or in aggregate demand. No place is given the institutional structure of the marketing sector as a point of policy leverage.

In its 1964 report the National Agricultural Advisory Commission gave central attention to the problem of price instability in the fresh fruit and vegetable industry.[292] Some of the institutions proposed to deal with this problem deserve mention in this study. Included with the perennial policy proposals such as the encouragement of marketing cooperatives and the formation of bargaining associations, the use of market orders and agreements and Section 32 government purchases were

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[291] Schultz, T.W., Agriculture in an Unstable Economy, (New York: McGraw-Hill Co., Inc.) 1945, p. 216.

[292] Farm Policy in the Years Ahead, A Report of the National Agricultural Advisory Commission, Washington, D.C., Nov. 1964.

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proposals relating to the potential conflict between the production and marketing sectors and its implications for farm price stability.

The first of these proposals was a revision in the 1937 Agricultural Marketing and Agreement Act, which requires joint control over the provisions of market orders and agreements by handlers and producers, to provide not only that producers exert greater control over these provisions but that the right of price and quantity limitations be given directly to producers. Under the present arrangement producers must enforce price and volume regulations through shipping point marketing firms. This proposal recognizes the price and output conflict between producers and shipping point firms and the impediments to success of these institutions presented by joint control.[293] The proposal does not alleviate the conflicts but attempts to circumvent them by changing the locus of control at shipping point. Such a revision may result in more successful market orders and agreements since it would be more difficult for shippers to undermine their provisions. But it probably would not provide an acceptable conflict resolution.

A not dissimilar proposal, having as its purpose to ". . .prevent the scramble for sales on the part of hundreds of sellers from severely depressing prices for a commodity for which moderate price changes have virtually no effect on the total quantity the market will take.", was the encouragement of the formation of grower-controlled area sales

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Another proposal was the granting of monopoly power to producers through institutions termed "area commodity agencies". These producer-controlled agencies were designed to reduce the costs of price variations for perishable crops originating in both supply and demand. A central sales agency would impose a price floor on the crop by agreeing to purchase all of the crop at that price. At higher prices the producer would sell his own crop but would remit one-fifth of the value of the sale to the area commodity agency; this value would be pooled with the proceeds of other producers and credited to the producer's account. The agency would accept the remaining crop at the minimum price and attempt to sell this portion of the crop immediately but not below the floor price. At the end of the season each producer would be paid his credited amounts less any agency losses resulting from supplies not sold at the minimum price.

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[294] These apparently resemble in form and purpose the agricultural marketing boards recommended by the National Commission on Food Marketing: Food from Farmer to Consumer, op. cit., p. 110. It has been suggested that stabilization of the terms of trade may be a primary goal of the fruit and vegetable bargaining association, Helmberger, P.G., Hoos, S., Cooperative Bargaining in Agriculture, (University of California, Division of Agricultural Sci.) 1965, p. 29.

agencies.[294] These presumably would leave the existing structure of the shipping point market intact but would provide a central selling policy for the marketing activity of all shippers. The agency proposal is based on both the elasticity of demand for fresh fruits and vegetables, the weak seller thesis of shipping point sales, and the premise that shipper selling effort is not always in the best interest of the grower-clients. This proposal, too, does not truly solve the problem of market conflict and coordination but rather imposes a grower-solution.

Another proposal was the granting of monopoly power to producers through institutions termed "area commodity agencies". These producer-controlled agencies were designed to reduce the costs of price variations for perishable crops originating in both supply and demand. A central sales agency would impose a price floor on the crop by agreeing to purchase all of the crop at that price. At higher prices the producer would sell his own crop but would remit one-fifth of the value of the sale to the area commodity agency; this value would be pooled with the proceeds of other producers and credited to the producer's account. The agency would accept the remaining crop at the minimum price and attempt to sell this portion of the crop immediately but not below the floor price. At the end of the season each producer would be paid his credited amounts less any agency losses resulting from supplies not sold at the minimum price.

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[294] These presumably feasible in form and purpose the agricultural marketing boards recommended by the National Commission on Food Marketing: Food from Farmer to Consumer, op. cit., p. 110. It has been suggested that standardization of the terms of trade may be a primary goal of the fruit and vegetable bargaining association, Heimberger, P.G., Hoos, S., Cooperative Bargaining in Agriculture, (University of California, Division of Agricultural Sci.) 1944, p. 22.

Without direct regulation of producer planting and harvesting, these area commodity agencies would not reduce price fluctuation originating in supplies. However, the cost of these fluctuations would be spread more evenly among producers than is presently the case. Moreover, the concentration of the supplies not sold by growers at the minimum price into a single selling authority, an authority with the power of collective abandonment and with the goal of stabilizing prices rather than recovering variable production and harvesting costs, would conceivably reduce price fluctuations. This assumes a significant portion of the farm price variability has its origin in the marketing sector.

Brief mention can be made of more conventional market institutions in the fresh fruit and vegetable industry and their implications for policy decisions. Although one of the stated objectives of the market order and agreement program is the enhancement of farm price stability, the mechanics of these instruments and the locus of control must be judged naive within the framework of this study. Without provision for coordinating market flows between the two sectors, these instruments provide producers and shippers the means to jointly determine product quality, sizes, grades, marketings and even prices. But no recognition is given conflicts in price and output levels between these two, assumed cooperating sectors. The tools have been applied most extensively to milk and fruits and vegetables; for the latter products they have met with mixed success and have not proven acceptable for a number of fresh fruits and vegetables. That this may be traced to their failure to reconcile marketing conflicts in the shipping point markets and their independence from the retail market level where

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The dilemma of the marketing cooperative as a service institution and an investment for the producer influences the effect these institutions can have on farm price levels and stability. They are evidence that the mere integration of market levels is insufficient for coordinating functions and resolving conflicts. There are proposals for the formation or federation of independent shippers and marketing cooperatives into centralized sales agencies. These, too, will face the problem of reconciling pricing and output goals of the several market levels. In addition, their failure to incorporate the retail market level will weaken their structure.

As discussed in the study, the increasing need for vertical coordination of the several market levels and the lack of institutions to serve this need and accommodate market conflicts and risk has led to extensive contractual and ownership integration of the production and marketing sectors. That this is stimulated by the need for vertical coordination is given by the fact that the integration seldom proceeds beyond the shipping point market. It seems doubtful the present levels of integration have facilitated resource allocation in the fresh fruit and vegetable production sector. On the one hand partial integration is destabilizing for the non-integrated sector. On the other, the terms of the integration do not include forward prices. For these reasons the integration of production and shipping point markets cannot be judged an entirely satisfactory means of vertical coordination in the industry. The institution will persist, nonetheless, because it is self-perpetuating and because it does reduce producer risk

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somewhat for those entering into such arrangements. A similar judgment can be made for the institution of shipper financing of producers; on balance it neither improves the allocation of resources in production nor reduces the market risk to which producers are subject.

Policy decisions surround the marketing institutions which have evolved in response to market risk, instability and conflict. These include the incomplete exchange arrangement, direct marketing, and retail pricing policies. To the extent these are manifestations of the market instability, alteration will not correct that instability. But as was discussed each is also a potential source of farm price variability. The results of the study do not provide unequivocal policy directions for these and other market trends and institutions. But it is strongly suggested that the performance of farm markets in terms of price stability would be different if retail pricing and merchandising strategy were less independent of the remainder of the marketing channel and if the marketing sector was obliged to take title and assume the risk of the product from the producer.

The problem at the retail level, the forward orientation of the marketing effort and independence from factor markets, presents a difficult policy question. It seems clear this independence of behavior can impose market instability and costs on preceding market levels. Aside from some experimental legislation concerning the legality of selling below cost, there is little precedent for insisting that prices at one market level must follow costs. Such a precedent could only be based on the consequent misallocation of resources, an economic problem not generally serving as a basis for legal action.

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Toward a Policy of Channel Coordination. Two general kinds of policy alternatives have been discussed for the problem of price instability for fresh fruits and vegetables: policy designed to reduce the risks of price fluctuations and that designed to reduce the costs of this risk. Policy directed at the first objective typically assumes the supply sector is the important source of the instability. The latter policy alternative posits that different forms of market organization and structure can alter the incidence of costs of market fluctuations among the various market levels. A policy of channel cooperation, suggested by this study, would consist of a compromise of these two alternatives. It would be recognized that the instability originating in supply characteristics is largely unpredictable and uncontrollable under the present state of producer markets. Consequently the costs of this instability would be shared between the marketing and production sectors. New institutional forms to replace the incomplete exchange arrangements would be necessary for this purpose.

A policy of channel cooperation would also recognize the insufficiency of prices for the direction of resources into their most efficient uses in production. Institutional forms either improving upon prices for this purpose or replacing them with other forms of market communication would thus be necessary. These institutions would be encouraged by the marketing sector if the costs of market instability were being shared by that sector.

Above all, the policy would recognize the interdependence of vertically related firms in a distribution channel and the potential destabilizing results of this interdependence without coordination. It would recognize the need for coordinating institutions and stabilizing

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mechanisms under these circumstances, that "Equilibrium among interdependent firms. . .requires an organization of sufficient formality to prevent independent behavior from destabilizing the market.[295] And, ". . .there are a number of elements in the structure and organization of this industry tending to reduce the degree of coordination among these various levels of the marketing system. . .".[296]

The dimensions of the called for institutions are more easily put forth than formalized into working institutions. They must have within them the capability for enforcing optimum channel output and pricing levels in the face of conflicts among the market levels. They must provide some means by which the organization of resources in production can be rationalized and coordinated with the needs of the marketing sector and consumers. They will need to permit a variety of enterprise combinations within the channel; otherwise extensive integration of the marketing and production functions will result. Finally, the needed institutions must consist of a compromise between channel freedom and responsibility.

Present institutions meet few of these criteria; probably none will ever meet them all. Yet they provide the guideposts toward the institutional development for dealing with the problems discussed in this study. The needed institutions will never be forthcoming so long

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[295] Phillips, A., Market Structure, Organization and Performance (Cambridge, Mass.: Harvard University Press) 1962, p. 37.

[296] Jamison, J.A., The California Fresh Deciduous Fruit Industry: Structure, Organization, and Practices, California Agricultural Experiment Station, Giannini Foundation Research Report, No. 275, April 1964, p. 125.

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[226] Jamison, J.A., The California Fresh Deciduous Fruit Industry: Structure, Organization, and Practices, California Agricultural Experiment Station, Giannini Foundation Research Report, No. 272, April 1964, p. 125.

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APPENDIX A

Supply, Utilization, Prices and Marketing Costs for Fresh Fruits and Vegetables, 1947-64

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Table A-1. Supply, Utilization, Prices, and Marketing Costs for Fresh Fruits and Vegetables, 1947-64

Year	Domestic Production[1]	Imports[1]	Beginning Stocks[1]	Exports[2]	Per cap. Consump.[1]	Econ. Aband.[3]	Marketing Costs[4]	Retail Price[5]	Farm Price[5]	No. of Mar. Ords., Agree
					1957-59 = 100					
1947	106.8	99.3	89.7	87.4	136.1	67.6	42.5	73.6	91.1	53.3
1948	101.7	104.0	81.8	52.3	130.0	173.9	51.5	77.0	90.6	58.5
1949	99.2	97.7	66.7	48.8	122.2	135.7	52.7	81.0	95.1	65.3
1950	96.9	100.8	79.0	60.5	114.4	383.2	53.6	77.9	87.7	72.2
1951	97.1	100.3	99.1	69.9	115.6	135.0	66.6	81.2	92.1	74.0
1952	98.3	102.1	67.7	75.7	112.0	27.0	68.9	96.1	114.6	70.5
1953	99.6	98.9	66.2	81.3	103.2	192.9	71.4	90.3	95.5	70.5
1954	97.6	95.1	80.9	85.6	105.6	129.5	73.6	89.6	94.2	75.7
1955	97.0	89.8	82.5	92.0	102.9	62.5	79.8	90.1	95.2	86.0
1956	100.9	93.2	85.3	107.0	102.9	154.9	87.8	96.1	103.4	91.2
1957	100.7	95.0	86.9	106.0	101.3	33.1	94.4	96.8	95.4	96.3
1958	98.4	99.2	106.2	94.8	98.7	131.8	98.7	103.4	105.8	98.0
1959	100.9	105.1	106.2	98.7	99.5	134.9	107.2	99.4	98.6	104.9
1960	102.9	117.9	102.3	96.0	99.3	245.8	112.6	106.3	112.7	120.4
1961	102.1	109.5	94.4	98.4	96.7	127.3	114.0	104.2	101.6	122.1
1962	101.1	98.7	99.9	96.3	93.7	40.4	119.0	107.9	107.9	130.7
1963	97.2	102.6	109.1	95.9	90.4	87.6	123.7	113.2	114.1	130.7
1964	99.2	104.0	114.7	99.0	90.9	75.8	129.9	120.0	125.9	129.0

[1]U.S. Food Consumption, Sources of Data and Trends, 1909-63, annual supplements, U.S. Department of Agriculture, Economic Research Service, Statistical Bulletin No. 364, June 1965.

[2]Ibid. Includes Department of Agriculture exports.

[3]Agricultural Statistics, U.S. Department of Agriculture, Statistical Reporting Service, annual. Data for vegetable crops only.

[4]Data from The Marketing and Transportation Situation, U.S. Department of Agriculture, Economic Research Service, quarterly; and Cost Components of Farm-Retail Price Spreads for Foods, National Commission of Food Marketing, Technical Study No. 9, June 1966. Costs deflated by the index of wholesale prices.

[5]From: Farm-Retail Spreads for Food Products, U.S. Department of Agriculture, Miscellaneous Publication No. 741, Nov. 1957; Farm-Retail Spreads for Food Products, 1947-64, U.S. Department of Agriculture,

Table 4-1. Summary, Detailed Description, and Marketing Costs for Fresh Fruits and Vegetables, 1947-54

Year	Domestic Production	Imports	Beginning Stocks	Export	Net Domestic Disappearance	Per capita Consumption	Marketing Charges	Retail Price	Farm No. of Farms	Price Index, All Foods
					1947-49 = 100					
1947	104.8	87.4	87.4	104.1	87.4	87.4	87.4	87.4	87.4	87.4
1948	107.1	87.4	87.4	87.4	87.4	87.4	87.4	87.4	87.4	87.4
1949	87.4	87.4	87.4	87.4	87.4	87.4	87.4	87.4	87.4	87.4
1950	87.4	87.4	87.4	87.4	87.4	87.4	87.4	87.4	87.4	87.4
1951	87.4	87.4	87.4	87.4	87.4	87.4	87.4	87.4	87.4	87.4
1952	87.4	87.4	87.4	87.4	87.4	87.4	87.4	87.4	87.4	87.4
1953	87.4	87.4	87.4	87.4	87.4	87.4	87.4	87.4	87.4	87.4
1954	87.4	87.4	87.4	87.4	87.4	87.4	87.4	87.4	87.4	87.4

Sources: Imports, Department of Agriculture. Beginning stocks, Bureau of the Census. Exports, Bureau of Foreign Agricultural Relations. Net domestic disappearance, computed as residual. Per capita consumption, computed from net domestic disappearance and Bureau of the Census population data. Marketing charges, Bureau of Labor Statistics. Retail prices, Bureau of Labor Statistics. Farm prices, Department of Agriculture. Number of farms, Department of Agriculture. Price index, all foods, Bureau of Labor Statistics.

Source: Department of Agriculture.

Table A-1. Con't.

ERS-226, April 1965; The Marketing and Transportation Situation, U.S. Department of Agriculture, Economic Research Service, Jan. 1960.

[6] Federal and State Enabling Legislation for Fruit and Vegetable Market Orders: Evolution and Current Status, National Commission on Food Marketing, Technical Study No. 4, Supplement No. 1.

Table A-2. Market Level Cost Components of the Fresh Fruit and Vegetable Marketing Margin, 1964.

Market Levels	Total Margin	Cost Components: Labor	Containers, Supplies	Build. Equip.	Advert. Promot.	Cartage Veh.	Other Trans.	Other Exp.	Profit Before Taxes
	dollars								
Retailing	30.10	14.23	0.91	7.21	2.40	-	-	3.25	2.10
Delivery	1.73	0.89	0.07	0.12	0.06	0.10	-	0.41	0.08
Wholesale	8.90	4.52	0.39	0.64	0.04	0.24	-	2.39	0.68
Transportation	13.40	-	-	-	-	-	13.40	-	-
Harvest, Hauling, Packing, Selling	12.80	6.07	5.06	0.89	-	-	-	0.78	-
All Levels	66.93	25.71	6.43	8.86	2.50	0.34	13.40	6.83	2.86
percent	100.0%	38.4	9.6	13.2	3.7	0.5	20.0	10.2	4.3

Source: Cost Components of Farm-Retail Price Spreads for Foods, National Commission on Food Marketing, Technical Study No. 9, 1966, p.46

Table 4-2. Modified Level Gear Components of the Trash Truck and Wastewater Management Model.

Material Levels	Total Weight	Sum Metals	Corrosive Metals	Dent Components: Metallic Metals	Plastic	Rubber	Other Trash	Sport Debris Tires
	----------	----------	----------	dollars ----------	----------	----------	----------	----------
Tetanus	20.10	14.23	0.63	7.61	0.05	-	2.05	2.05
Retrieved	1.73	4.52	0.39	0.04	0.24	-	0.11	0.03
Processed	9.80	4.52	0.39	0.04	0.24	-	2.05	0.13
Transportation	13.40	-	-	-	-	13.40	-	-
Harvest, Refining, Refining, Refining	12.30	4.07	2.06	-	-	-	0.24	-
ALL Levels Present	71.83	27.71	6.13	2.53	0.53	13.40	2.53	2.53

Source: Post Consumption of Plastic Packaging Impacts Chemical Industry on Beach/Ocean Trash, Jacobsen, Jr. & Jacobsen, Jr., 1990.

Table A-3. Calculation of the Index of Fresh Fruit and Vegetable Marketing Costs, 1947-64.

	Labor Costs[2]		Rail-Truck Transportation[3]		Other Costs[4]		Profit Before Taxes		Total Fresh Prod. Marketing Costs	
	$billion[5]	$weighted[6]	$bill.	$weigh.	$bill.	$weigh.	$bill.	$weigh.	$weigh. 1957-59=100	
'64 Cost Weights[1]		38.4%		20.0		37.2		4.3	100.0%	
Year										
1947	10.2	3.92	2.0	0.40	8.9	3.31	1.5	0.06	7.70	56.1
1948	11.2	4.30	2.2	0.44	10.2	3.79	1.3	0.06	8.60	62.6
1949	11.7	4.49	2.3	0.46	10.4	3.98	1.3	0.06	9.00	65.5
1950	12.2	4.68	2.7	0.54	9.5	3.53	1.6	0.07	8.83	64.2
1951	13.0	4.99	2.7	0.54	11.7	4.35	1.3	0.07	9.95	72.4
1952	13.8	5.30	3.1	0.62	12.2	4.54	1.4	0.06	10.53	76.6
1953	14.6	5.61	3.3	0.66	12.1	4.50	1.5	0.06	10.83	78.8
1954	15.3	5.88	3.4	0.68	12.1	4.50	1.5	0.06	11.13	81.0
1955	15.7	6.03	3.4	0.68	13.5	5.02	1.8	0.08	11.80	85.9
1956	16.3	6.26	3.8	0.76	14.3	5.32	1.9	0.08	12.43	90.5
1957	16.8	6.45	3.9	0.78	15.3	5.69	1.9	0.08	12.00	94.6
1958	17.1	6.57	4.2	0.84	16.3	6.06	1.9	0.08	13.55	98.6
1959	17.8	6.84	4.5	0.90	17.8	6.62	2.1	0.09	14.45	105.2
1960	18.7	7.18	4.6	0.92	18.8	6.99	2.1	0.09	15.18	110.5
1961	18.8	7.22	4.9	0.98	19.2	7.12	2.2	0.09	15.45	112.5
1962	19.7	7.56	4.9	0.98	20.1	7.48	2.2	0.09	16.13	117.4
1963	20.3	7.80	5.0	1.00	21.2	7.89	2.4	0.10	16.78	122.1
1964	21.0	8.06	5.1	1.02	22.4	8.33	2.7	0.12	17.53	127.6

[1]Source: Table A-2.

[2]Includes imputed earnings of owners and family labor and wage supplements.

[3]Includes heating and refrigeration costs.

[4]Includes advertising, depreciation, fuel, power, containers, packing material, air and water transport, interest on borrowed capital, taxes (except on income), non-corporate profits, buildings and equipment, cartage, and vehicles.

Table A-3. Index Numbers of the Price Trend of Various Items Used in Construction Work in Tokyo.

| Year & Month | Labor Charge | | | Materials | | |

Table A-3. Con't.

[5]Source: The Marketing and Transportation Situation, U.S. Department of Agriculture, Economic Research Service, quarterly. The figures in billions of dollars refer to marketing costs for all food products.

[6]Calculated by applying the constant cost weights for fresh fruits and vegetables to annual total food marketing costs.

Table 4-3 (Cont'd.)

Source: [illegible]

Note: [illegible]

Projected by applying the constant 1980 weighted coal prices and average fuel prices to annual total coal requirements.

APPENDIX B

Selected Trends in the Market Organization of the Fresh Fruit and Vegetable Industry, 1946-65.

APPENDIX B

Selected Trends in the Market Organization of the Fresh Fruit and Vegetable Industry, 1946-69.

Table B-1. Selected Trends in the Market Organization of the Fresh Fruit and Vegetable Industry, 1946-65.

Year	Fruit and Vegetable Farms[1]		Grower-shipper Plants[2]		Shipping Point Assemblers[3]		Shippers[4]		Market Orders Agreements in Effect[5]
	number	av. sales	number	av. sales	number	sales	number	av. sales	number
	(000)	(dollars)		(carlots)		($million)		(carlots)	
1946	Na	486	NA	NA	2,038	1,038	NA	NA	32
1947	NA	500	NA	NA	2,036	1,072	NA	NA	31
1948	2,935	510	NA	NA	2,032	1,087	NA	NA	34
1949	2,568	585	NA	NA	2,030	1,125	NA	NA	38
1950	2,190	920	NA	300	2,024	1,143	NA	NA	42
1951	1,815	1,300	NA	310	2,012	1,200	NA	NA	43
1952	1,450	1,680	NA	320	2,007	1,238	NA	NA	41
1953	1,090	2,057	NA	330	2,000	1,277	NA	510	41
1954	704	2,483	7,700	339	1,993	1,288	2,780	549	44
1955	670	2,790	7,349	350	2,059	1,341	3,538	583	50
1956	615	3,100	6,975	358	2,130	1,374	3,298	620	53
1957	585	3,400	6,625	368	2,181	1,411	3,060	656	56
1958	530	3,715	6,275	377	2,277	1,453	2,800	692	57
1959	498	4,067	5,965	388	2,230	1,462	2,570	728	61
1960	420	4,380	5,544	399	2,184	1,473	2,320	762	70
1961	390	4,693	5,435	403	2,162	1,484	2,240	795	71
1962	330	5,000	5,300	408	2,130	1,500	2,160	826	76
1963	290	5,315	5,175	413	2,106	1,505	2,080	858	76
1964	250	5,630	5,049	418	2,071	1,520	2,000	890	75
1965	200	5,980	4,921	424	2,047	1,530	1,912	921	76

[1] U.S. Bureau of the Census. U.S. Census of Agriculture. Data interpolated for non-census years. Includes farms producing fruits and vegetables for the fresh and processed markets. Includes only those farms for which the crops accounted for at least 50 percent of total value of sales; excludes small berry farms.

[2] Organization and Competition in the Fruit and Vegetable Industry, National Commission on Food Marketing, Technical Study No. 4, Washington, D.C., June 1966, p. 57. Data interpolated for non-survey years. Grower-shippers are plants combining the production and shipping point marketing functions.

Table B-1. Selected Trends in the Market Organization of the Fresh Fruit and Vegetable Industry, 1964-85.

Year	Fruit and Vegetable Farms[1]	Grower-shipper Plants[2]	Shipping Point Assemblers[3]	Market Outlets Represented by Assemblers	Average sales per assembler	Average sales per grower-shipper	Average sales per farm	Average number of assembler outlets	Average number of grower-shipper outlets	Average number of farm outlets
	(000)	number	number	number	(multiple)	(dollars)	(dollars)	(dollars)	(dollars)	(dollars)
1964	384	2,500	1,200	2,500	1,920	960	6,250	2,083	833	2,604
1967	374	2,400	1,100	2,400	2,182	1,000	6,400	2,182	917	2,801
1969	358	2,300	1,000	2,300	2,300	1,043	6,600	2,300	957	3,000
1972	339	2,200	1,000	2,200	2,200	1,091	6,600	2,200	1,000	3,200
1974	330	2,100	1,000	2,100	2,100	1,143	6,600	2,100	1,048	3,300
1977	320	2,000	1,000	2,000	2,000	1,200	6,600	2,000	1,100	3,300
1979	310	1,900	1,000	1,900	1,900	1,263	6,600	1,900	1,158	3,300
1982	300	1,800	1,000	1,800	1,800	1,333	6,600	1,800	1,222	3,300
1985	290	1,700	1,000	1,700	1,700	1,412	6,600	1,700	1,294	3,300

U.S. Bureau of the Census. U.S. Department of Agriculture. Data in category 2 are estimated for non-census years. Includes farms producing fruits and vegetables for the fresh and processed markets. Includes only those farms for which the income accounted for at least 50 percent of total value of sales; excludes small backyard farms.

Specialized and Commercial Corporation Farms, 1985. Washington, D.C.: U.S. Government Printing Office, 1987. Data for 1985 are preliminary.

Economic Study No. 4, Marketing Costs and Margins for Fresh Fruits and Vegetables, 1964-67. Washington, D.C.: U.S. Government Printing Office, 1970.

Growers-shippers are primarily concerned with production and marketing the products of their own farms. Assemblers are primarily concerned with purchasing products from growers-shippers and other farms and marketing them to wholesalers, retailers, and processors.

Table B-1. Cont't.

Year	Shipping Point Brokers[6]		Marketing Cooperatives[7]		Shipping Point Handlers[8]		FLAGALTEX Handlers[9]		Multi-Unit Handlers[10]	
	number	sales	number	sales	number	sales	number		number	
		(000 cars)		($million)		(000 cars)				($000)
1946	2,333	NA	NA	NA	NA	NA	NA		NA	
1947	2,335	NA	NA	NA	NA	870	NA		NA	523
1948	2,337	NA	NA	NA	NA	837	NA		NA	519
1949	2,338	NA	NA	NA	NA	805	NA		NA	517
1950	2.339	875	NA	NA	NA	771	NA		NA	514
1951	2.341	877	862	NA	NA	738	NA		NA	512
1952	2,343	848	810	596	NA	706	NA		NA	509
1953	2.344	879	777	590	NA	673	NA		NA	677
1954	2.345	881	751	609	NA	640	NA		NA	727
1955	2,347	883	740	680	11,480	605	1,839		845	779
1956	2,349	884	756	722	10,887	617	1,852		790	833
1957	2,350	886	759	722	10,273	628	1,859		738	884
1958	2,352	887	762	787	9,685	638	1.873		688	936
1959	2,354	888	723	859	9,075	650	1,881		628	989
1960	2,355	890	697	906	8,535	677	1,899		575	1,040
1961	2.340	878	670	941	7,864	705	1,898		523	1,095
1962	2.324	866	640	1,003	7,675	732	1,897		519	1,096
1963	2,308	853	634	1,055	7,460	760	1,897		516	1,097
1964	2,292	841	625	1,137	7,255	789	1,897		514	1,098
1965	2,277	829	617	1,215	7,049	814	1,896		511	1,099
				NA	6,833		1,895		508	1,100

[3]Bureau of the Census. U.S. Census of Business. Data interpolated for non-census years. Includes cooperative shipping point plants; excludes family operated shipping operations.

[4]NCFM Technical Study No. 4, op. cit. Excludes cooperative shipping establishments; includes all sizes of shippers.

[5]Federal and State Enabling Legislation for Fruit and Vegetable Market Orders: Evolution and Current Status. National Commission on Food Marketing, Technical Study No. 4, Supplement No. 1. Includes state and federal market orders and agreements.

Table D-1. Cont'd.

Year Shipping Point Dealers Marketing Cooperatives Shipping Point Handlers Manufacturers Retailers

number	sales (000 omit)	number	sales (000 omit)	number	sales (000 omit)	number	sales (000 omit)	number	sales (000 omit)
1934	NA	NA	NA	NA	NA	NA	NA	NA	NA
1935	NA	NA	NA	NA	NA	NA	NA	NA	NA
1936	NA	NA	NA	NA	NA	NA	NA	NA	NA
1937	NA	NA	NA	NA	NA	NA	NA	NA	NA
1938	NA	NA	NA	NA	NA	NA	NA	NA	NA
1939	NA	NA	NA	NA	NA	NA	NA	NA	NA
1940	NA	NA	NA	NA	NA	NA	NA	NA	NA
1941	NA	NA	NA	NA	NA	NA	NA	NA	NA
1942	NA	NA	NA	NA	NA	NA	NA	NA	NA
1943	NA	NA	NA	NA	NA	NA	NA	NA	NA
1944	NA	NA	NA	NA	NA	NA	NA	NA	NA
1945	NA	NA	NA	NA	NA	NA	NA	NA	NA
1946	NA	NA	NA	NA	NA	NA	NA	NA	NA
1947	NA	NA	NA	NA	NA	NA	NA	NA	NA
1948	NA	NA	NA	NA	NA	NA	NA	NA	NA
1949	NA	NA	NA	NA	NA	NA	NA	NA	NA
1950	NA	NA	NA	NA	NA	NA	NA	NA	NA
1951	NA	NA	NA	NA	NA	NA	NA	NA	NA
1952	NA	NA	NA	NA	NA	NA	NA	NA	NA
1953	NA	NA	NA	NA	NA	NA	NA	NA	NA
1954	NA	NA	NA	NA	NA	NA	NA	NA	NA
1955	NA	NA	NA	NA	NA	NA	NA	NA	NA
1956	NA	NA	NA	NA	NA	NA	NA	NA	NA
1957	NA	NA	NA	NA	NA	NA	NA	NA	NA
1958	NA	NA	NA	NA	NA	NA	NA	NA	NA
1959	NA	NA	NA	NA	NA	NA	NA	NA	NA
1960	NA	NA	NA	NA	NA	NA	NA	NA	NA
1961	NA	NA	NA	NA	NA	NA	NA	NA	NA
1962	NA	NA	NA	NA	NA	NA	NA	NA	NA
1963	NA	NA	NA	NA	NA	NA	NA	NA	NA
1964	NA	NA	NA	NA	NA	NA	NA	NA	NA
1965	NA	NA	NA	NA	NA	NA	NA	NA	NA
1966	NA	NA	NA	NA	NA	NA	NA	NA	NA
1967	NA	NA	NA	NA	NA	NA	NA	NA	NA
1968	NA	NA	NA	NA	NA	NA	NA	NA	NA
1969	NA	NA	NA	NA	NA	NA	NA	NA	NA
1970	NA	NA	NA	NA	NA	NA	NA	NA	NA
1971	NA	NA	NA	NA	NA	NA	NA	NA	NA
1972	NA	NA	NA	NA	NA	NA	NA	NA	NA
1973	NA	NA	NA	NA	NA	NA	NA	NA	NA
1974	NA	NA	NA	NA	NA	NA	NA	NA	NA
1975	NA	NA	NA	NA	NA	NA	NA	NA	NA
1976	NA	NA	NA	NA	NA	NA	NA	NA	NA
1977	NA	NA	NA	NA	NA	NA	NA	NA	NA
1978	NA	NA	NA	NA	NA	NA	NA	NA	NA
1979	NA	NA	NA	NA	NA	NA	NA	NA	NA
1980	NA	NA	NA	NA	NA	NA	NA	NA	NA
1981	NA	NA	NA	NA	NA	NA	NA	NA	NA
1982	NA	NA	NA	NA	NA	NA	NA	NA	NA
1983	NA	NA	NA	NA	NA	NA	NA	NA	NA
1984	NA	NA	NA	NA	NA	NA	NA	NA	NA
1985	NA	NA	NA	NA	NA	NA	NA	NA	NA
1986	NA	NA	NA	NA	NA	NA	NA	NA	NA
1987	NA	NA	NA	NA	NA	NA	NA	NA	NA
1988	NA	NA	NA	NA	NA	NA	NA	NA	NA
1989	NA	NA	NA	NA	NA	NA	NA	NA	NA
1990	NA	NA	NA	NA	NA	NA	NA	NA	NA
1991	NA	NA	NA	NA	NA	NA	NA	NA	NA
1992	NA	NA	NA	NA	NA	NA	NA	NA	NA
1993	NA	NA	NA	NA	NA	NA	NA	NA	NA
1994	NA	NA	NA	NA	NA	NA	NA	NA	NA
1995	NA	NA	NA	NA	NA	NA	NA	NA	NA
1996	NA	NA	NA	NA	NA	NA	NA	NA	NA
1997	NA	NA	NA	NA	NA	NA	NA	NA	NA
1998	NA	NA	NA	NA	NA	NA	NA	NA	NA
1999	NA	NA	NA	NA	NA	NA	NA	NA	NA
2000	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table B-1, Con't.

Year	Vertically Integrated Handlers[11]	Single Crop Handlers[12]	Assembler Sales To:[13] Retailers	Wholesalers	Merchant Wholesalers[14]	
	number	number	($million)	($million)	number	av. sales ($000)
1946	NA	NA	97	870	6,000	523
1947	NA	NA	103	837	6,078	519
1948	NA	NA	109	805	6,127	517
1949	NA	NA	112	771	6,200	514
1950	NA	NA	116	738	6,260	512
1951	NA	NA	121	706	6,320	509
1952	NA	5,325	126	673	6,390	501
1953	366	5,117	130	640	6,450	503
1954	347	4,900	135	605	6,520	500
1955	328	4,662	177	617	6,455	499
1956	308	4,447	220	628	6,410	496
1957	288	4,241	264	638	6,350	494
1958	268	4,003	308	650	6,291	491
1959	249	3.790	324	677	6,291	488
1960	229	3,556	340	705	6,070	502
1961	231	3,489	357	732	5,838	518
1962	233	3,407	373	760	5,600	537
1963	234	3,340	391	789	5,123	582
1964	235	3,251	408	814	4,920	602
1965	236	3,192	425	843	NA	NA

[6]NCFM Technical Study No. 4, op. cit. Excludes brokers located in fresh fruit and vegetable wholesale terminal markets.

[7]Statistics of Farmer Cooperatives, U.S. Department of Agriculture, Farmer Cooperative Service, annual. Includes cooperatives handling both fresh and processed fruits and vegetables. Sales exclude inter-cooperative sales.

[8]NCFM Technical Study No. 4, op. cit. Includes shipping point shippers and grower-shippers; excludes brokers and marketing cooperatives.

Table 1. [illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table B-1. Con't.

[9]Ibid. Number of plants in the three major states of Florida, California and Texas.

[10]Ibid. Includes shipping point plants vertically and horizontally integrated; excludes grower-shippers.

[11]Ibid. Excludes grower-shippers.

[12]Ibid.

[13]U.S. Bureau of the Census. U.S. Census of Business. Data interpolated for non-census years.

[14]Ibid.

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