THE VENEZUELAN BROILER INDUSTRY: STRUCTURE, PRACTICES AND PERFORMANCE

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ABSTRACT

THE VENEZUELAN BROILER INDUSTRY:
STRUCTURE, PRACTICES AND PERFORMANCE

By

Alejandro Graterol-Jatar

The objectives of this study are to: (1) analyze the Venezuelan broiler industry with special reference to production, processing, and marketing stages, as well as the degree of market coordination, (2) evaluate the market performance, (3) identify the main obstacles in improving market performance, and (4) provde a proposal for improving market coordination and performance.

The study was undertaken in order to answer the following questions regarding the Venezuelan broiler industry:

1. What phase of growth has the industry reached?

2. Have the growth and development been uneven?

3. Are there problems of short-run instability due to drop in price and demand fluctuation?

4. What degree of coordination exists in the broiler marketing system?

5. Has some level of integration been achieved?

6. Are processing plants active elements of the total market strategy?

7. Does the quality of the processing system provide flexibility for distribution of final products?

The objectives of the study were achieved by:

1. Comparing the evolution of the broiler industry in Venezuela and several developed countries, among them England and the United States.

2. Determining the factors that have contributed to the development of higher levels of market coordination and performance.

3. Selecting from the findings those that can be adjusted to the Venezuelan needs.

This study has found that:

1. Economies of scale and coordination have not yet been fully exploited in Venezuela because the relationship between successive stages or functions in terms of optimum size and physical efficiency is seldom considered.

2. The industry, in general, has shown progressiveness as far as feed mill, hatchery, hatchery-supply farms, and grow-out operations are concerned, while problems of short-run instability are now stimulating the improvement of processing and marketing techniques, as well as coordination.

3. Product performance is not as good as desirable. Short shelf life affects processing schedules and product appearance.

4. Lack of research in important areas such as supply and demand patterns, market coordination, and so on, induces misinterpretation of the factors on which to base

decisions and hinders the achievements of economies through large scale and coordination.

5. The high degree of growers' independence and the fact that most of them tend to observe current prices rather than the expected prices at time of marketing when they order chicks for placements, are important factors affecting the supply-demand relationship and leading to short-run instability.

Some recommendations which would narrow the gap between actual and potential performance are presented in the last part of the study.

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A THESIS

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To my parents

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CHAPTER I

INTRODUCTION

STATEMENT OF THE PROBLEM

Analysis of the development of the broiler industry in several countries reveals that they have shared similar experiences in the industry's growth.[1] Initially, the broiler industry expanded very rapidly because demand increased fast enough to absorb the increasing supply. Next, as soon as the industry approached its optimum size, from the demand standpoint, there was a persistent tendency to continue expanding. Finally, this trend resulted in (1) severe problems of overproduction with periodic declines in price, and (2) consequent readjustments to the structure of the industry to bring supply into line with demand at an adequate price.

This seems to indicate that short run instability is the main problem in the growth of the broiler industry. There are three major sources of instability in the

[1]See for example: Bernard F. Tobin and Henry B. Arthur "Dynamics of Adjustment in the Broiler Industry," Boston Division of Research, Graduate School of Business Administration, Harvard University, 1964; and Eric S. Clayton, "The Economics of the Poultry Industry" London, Longmans, Green, and Co., Ltd. 1967; and Alejandro Graterol-Jatar, "Comparative Study of American-Venezuelan Broiler Industry and Processing Methods," unpublished paper, Michigan State University, 1971.

relationship of supply and demand. First, the cyclical patterns of production impose a natural lead time due to the relationships among biological processes such as rearing replacement pullets, producing eggs, hatching chicks, and rearing broilers. Second, the many stages involved in the production and marketing processes and their independence of action are another source of short-run instability. There might be expected that the more independently the stages operate, the lower is the level of coordination and the more frequently bottlenecks and surpluses appear along the product chain. The third source of uncertainty in the supply-demand relationship is the human decisions, which deal with actions that affect the lead time flexibility and the level of coordination. Although human decisions are of major importance so far as fluctuation of total supply is concerned, they also provide important instruments for human control of the industry.

To reduce the adverse effects of these problems, structural changes and adjustments, directed toward more efficient coordination, have taken place within the industry. In some countries this has led to a successful, vertically integrated structure which has allowed economies of scale and lowered costs. Of course, the behavioral and attitudinal patterns shown by members of the industry also may have played an important role in their increased efficiency.

This study analyzes the Venezuelan broiler industry in

light of these observations. The study evaluates the industry's performance, with special reference to market structure and conduct, and provides a proposal for improving market coordination and performance.

OBJECTIVES

The objectives of this study are to:

1. Analyze the Venezuelan broiler industry with special reference to production, processing, and merchandising stages, as well as the degree of market coordination.

2. Evaluate the market performance.

3. Identify the main obstacles in improving market performance, and

4. Provide a proposal for improving market coordination and performance.

HYPOTHESES

The study has been undertaken to answer the following questions regarding the Venezuelan broiler industry:

1. What phase of growth has the industry reached?

2. Have the growth and development been uneven?

3. Are there problems of short-run instability due to drop in price and demand fluctuation?

4. What degree of coordination exists in the broiler

marketing system?

5. Has some level of integration been achieved?

6. Are processing plants active elements of the total market strategy?

7. Does the quality of the processing system provide flexibility for distribution of final products?

PROCEDURE

The objectives of this study were achieved by:

1. Comparing the evolution of the broiler industry in Venezuela and several developed countries, among them England and the United States.

2. Determining the factors that have contributed to the development of higher levels of market coordination and performance.

3. Selecting from the findings those that can be adjusted to the Venezuelan needs.

Accomplishment of these steps was based upon:

1. Venezuelan data and information obtained from both the public and private sectors.

2. Field trips and informal interviews with growers, hatching egg producers, hatcherymen, processors, feed mill administrators, wholesalers, and retailers in Venezuela.

3. Field trips and informal interviews with members of the industry in the United States. These included

horizontally and vertically integrated enterprises, and owner-integrated complexes as well.

4. Research and Publications from Venezuela, the United States, and England were reviewed.

OVERVIEW

The remainder of this study has been organized as follows. In Chapter II the factors affecting demand for poultry meat in Venezuela are analyzed and some preliminary conclusions are derived. Chapters III, through Chapter VII consider and discuss the structural and organizational aspects of the broiler industry. This discussion provides important background information about the Venezuelan broiler industry and tends to bring it into better perspective. In Chapter III, information dealing with hatching egg supply flocks, hatcheries, and feed mills is presented. The production - growing out stage - is considered in Chapter IV, while poultry processing and marketing practices are discussed in Chapters V and VI respectively. In Chapter VII the organizational patterns of the whole industry are analyzed, with special attention given to the most recent changes and trends in the industry.

In each of these chapters, a brief discussion of the subject in developed countries is presented as a basis for (1) comparing and measuring the evolution and stage of

development of the Venezuelan broiler industry, and (2) selecting the factors that would allow the Venezuelan broiler industry to shorten the path toward an improved market performance.

Chapter VIII is titled The Venezuelan Broiler Industry: Evaluation of its Performance. This evaluation is based upon the findings of the preceding chapters, and it attempts to identify the main obstacles to improving market performance.

In Chapter IX a proposal for improving market performance and coordination is provided. This proposal has been designed in light of the results of this study, and the Venezuelan broiler industry at its present stage of growth and development.

CHAPTER II

FACTORS AFFECTING DEMAND

INTRODUCTION

The Venezuelan broiler industry has reached a stage in which problems of short-run instability are frequently faced. This has given investors considerable concern about whether expected sales and returns on investments over the next years are likely to justify the risks. Therefore, they are looking for reasonable assumptions or estimates of long-run market conditions on which to base their decisions. Will growth in demand maintain the same rate as growth of capacity and output? Will average costs and annual average prices continue to fall in the future? If so, how far are costs and prices likely to fall? These questions are very difficult to answer precisely. Nevertheless, a reasonable prediction may be obtained, based upon a systematic analysis of general trends of the industry.

In Venezuela as well as in the United States and England, the annual production of poultry meat has shown a sustained increse. In all these countries, the most important factor affecting this trend in poultry meat production is the supply of broilers. Therefore, analysis of this trend, and its possibilities for continuing or changing, should be focused on the interaction of supply and demand conditions

in the broiler industry. It means that the rate of expansion of the broiler industry in the United States, England and Venezuela as well, will depend upon the following factors: (1) On the supply side, expansion will depend upon the possibility of production costs, and thus selling prices of broiler meat, continuing to fall relative to selling prices of other meats and close substitutes for meat products; (2) On the demand side, expansion will depend upon total national population, consumer incomes, consumer tastes and preferences, prices of other meats and close substitutes, and prices of other commodities and services. The aforementioned demand factors affecting expansion of the industry are considered and discussed throughout this Chapter.

The Demand for Poultry Meat in Developed Countries

Analysis of the factors affecting demand for poultry in developed countries reveals that:

1. Total consumption of poultry meat has shown a sustained increase due to a rise in both, population and consumer expenditures.

2. Increasing consumer expenditures has brought on an increase in per capita consumption of chicken, mainly because of the high income elasticity of demand for poultry.

3. A strong diet consciousness has developed lately and has favored poultry consumption because of the low fat content of the meat.

4. Increasing productivity has allowed prices to decline in such a manner that chicken is not a luxury anymore; on the contrary, it is the cheapest meat and its consumption has been extended to week-days.

5. The quality of the product has always received great attention because of its significant value in creating an image that appeals to consumers.

6. Broilers are usually merchandised in a fresh, ready-to-cook form because of consumers' preferences. In England broilers are frozen when a surplus situation exists.

7. A seasonal pattern of demand has been found at least in the United States. This is due to shifts in demand which causes changes in output and prices.

In light of these observations we can then start analyzing the demand factors in the Venezuelan broiler industry.

The Demand Factors for Poultry Meat in Venezuela

The analysis of the factors affecting demand for poultry meat in Venezuela is performed by taking into consideration the following six aspects: Population and total

demand; total consumption of meat products; per capita consumption of meat; income elasticity of demand; consumer habits and preferences; and price relationships.

Population and Total Demand

Population and population changes are relevant factors in analyzing future demand for poultry meat, because these changes influence total long-run and short-run demand for meat. In the long-run, total demand is influenced by the size of population and the level of consumer income. In the short run, if a rapid rate of population growth coincides with a high level of employment and income, there may be an increase in prices and, thus, a decline in per capita consumption of many products may occur.

In Venezuela these changes have taken place as illustrated in Table II-1. Analysis of these data indicates that:

1. During the last eight years, the annual rate of population growth has been estimated around 3.5 percent. Although this rate is expected to decrease in the future, according to national estimations it will be still high and close to 3.0 percent in 1980.[1]

2. During the same period, the gross national product has shown a steady increase. Comparison of the growth rates

[1]Direccion General de Estadisticas y Censos Nacionales, Ministerio de Fomento, Venezuela.

TABLE II-1

TOTAL POPULATION, GROSS NATIONAL PRODUCT, AND DISPOSABLE INCOME IN VENEZUELA

1963 - 1970

Year	Population		G. N. P.[a/]		Disposable Income[a/]	
	Number of Inhabitants Thousands	Annual Rate of Growth Percent	Total Millions of $	Annual Rate of Growth Percent	Total Millions of $	Annual Rate of Growth Percent
1963	8,144		6,892		4,270	
		3.5		12.9		11.7
1964	8,427		7,778		4,770	
		3.5		5.8		7.2
1965	8,722		8,225		5,112	
		3.5		2.7		6.3
1966	9,030		8,445		5,434	
		3.5		4.6		3.3
1967	9,352		8,831		5,610	
		3.6		5.1		3.3
1968	9,686		9,285		6,084	
		3.6		3.8		6.4
1969	10,035		9,639		6,472	
		3.6		5.0		-
1970	10,399		10,120		n.a.	

n.a. = not available

a/ Dollars at 1969 prices

Elaborated From: U.S. Department of Commerce, AID Economic Book, July 1971; and Banco Central de Venezuela, Informe Economico correspondiente al año 1969.

of gross national product and population reveals that the former has exceeded the latter, thereby increasing gross national product on a per capita basis.

3. Personal and disposable incomes have been rising also, and are expected to continue increasing at higher rates than population growth.

Proceeding on the assumption that present trends will continue in the future, an increase in per capita income and personal consumption expenditures should be expected. Therefore, if no major changes in consumer tastes and preferences take place and poultry meat maintains its share of total food expenditures, it is possible to conclude that, under these assumptions, expenditures for poultry meat will rise in terms of current bolivars.

Total Consumption of Meat Products

In Venezuela, total consumption of all meat products has been increasing throughout the years. To illustrate this achievement and understand the relationship among meat products, it is convenient to look at the annual consumption data for all meats, presented in Table II-2. Analysis of these data indicates that:

1. Total consumption of all meat has more than tripled since 1950. This increase has been achieved because of the rise in population, as well as substantial increases in per capita consumption.

TABLE II-2

TOTAL CONSUMPTION OF RED MEATS AND POULTRY MEAT

IN VENEZUELA, SELECTED YEARS 1945 - 1970

(Millions of Pounds)

	1945	1950	1955	1960	1965	1970
Beef	126.1	155.7	180.8	272.3	357.3	471.8
Pork[a/]	27.1	51.8	51.4	71.8	75.2	102.9
Others[b/]	2.2	1.9	3.2	3.1	6.2	6.6
All Red Meats[c/]	155.4	209.4	235.4	347.3	438.7	581.3
Broiler	n.a	9.2	19.5	47.5	112.1	164.8
Hen	n.a	n.a	n.a	n.a	22.9	26.5
All Poultry Meat[d/]	-	9.2	19.5	47.5	135.0	191.3

n.a = not available

[a/] It includes imported meat products

[b/] It refers to lamb and goat

[c/] All red meats are on carcass weight equivalent basis.

[d/] All poultry meat figures are on ready-to-cook plus basis. (See glossary)

Elaborated From: Venezuela, Ministerio de Agricultura y Cria, Anuario Estadistico Agropecuario, Selected Issues.

2. Beef is the most important meat in the Venezuelan diet. Beef consumption represents more than 60 percent of total meat consumption.

3. Although total consumption of pork has increased, its share in the meat market has diminished. Nevertheless, the national industry has lately shown an impressive growth, which has allowed a significant reduction in imports of pork and pork products.

4. The poultry meat share of the meat market has been improving and, at present, poultry consumption represents more than 24 percent of total meats. The importance of the broiler industry as a source of meat in Venezuela is enhanced by the fact that broilers represent more than 85 percent of poultry meat and 20 percent of total meat consumption. In the future, the number of egg-laying chickens to be processed is expected to remain at the same level or to increase at a very low rate, so that broilers will constitute an even greater part of the poultry meat production.

Finally, data on turkeys are not available because consumption of turkey meat is insignificant and its production is restricted to a very few farms.

Per Capita Consumption of Meat

A more significant measure of the increase in meat consumption can be obtained by analyzing the per capita consumption of meat products, illustrated in Table II-3.

TABLE II-3

PER CAPITA CONSUMPTION OF POULTRY AND RED MEATS IN VENEZUELA

ESTIMATED AVERAGES FOR SELECTED YEARS 1950 - 1970

(Pounds per Capita)

Year	Poultry Meat[a/]			Red Meats[b/]				All Meats
	Broiler	Hen	Total	Beef	Pork	Others	Total	TOTAL
1950	1.8	n.a	1.8	30.9	10.3	0.4	41.6	43.4
1960	6.6	n.a	6.6	37.6	9.9	0.4	47.9	54.5
1965	12.9	2.6	15.5	41.0	8.6	0.7	50.3	65.8
1966	13.3	2.8	16.1	43.8	8.3	0.7	52.8	68.9
1967	14.3	2.8	17.1	43.3	8.5	1.2	53.0	70.1
1968	14.5	2.7	17.2	41.9	9.2	0.9	52.0	69.2
1969	14.9	2.5	17.4	45.7	10.0	0.6	56.3	73.7
1970	15.9	2.5	18.4	45.4	9.9	0.6	55.9	74.3

a/Ready-to-Cook Plus Weight (See glossary).

b/Carcass Weight

Elaborated From: Venezuela, Ministerio de Agricultura y Cria, Anuario Estadistico Agropecuario, Selected Issues.

Consumption of all meat products, on an annual per capita basis, has grown from 43.4 pounds in 1950 to 74.3 pounds in 1970. This represents a total increase in per capita meat consumption of more than 71 percent in 20 years. However, this increase has not been the same for every meat product category. Therefore, a further analysis of the participation of each major meat category is provided.

Poultry meat consumption shows the most impressive increase. It has grown from an estimated 1.8 pounds per capita in 1950 to an average of 18.4 pounds in 1970. This indicates an increase of more than 10 times in consumption in that 20-year period.

At the present the per capita consumption of broiler meat is estimated at 15.9 pounds. This means that the broiler industry has contributed more than 28 percent of the total 100 percent previously indicated.

From the figures shown in Table II-3, it is possible to observe that per capita consumption of broiler meat has been rising at different rates in recent years. This may well be interpreted as evidence that the Venezuelan broiler industry has reached the stage at which problems of short-run instability are frequently present.

Red meat consumption has shown an almost steady increase during the period under consideration. The major cause of this increase has been the rise in consumption of beef from 30.9 pounds per capita in 1950 to an estimated

45.4 pounds in 1970.

Consumption of pork has fluctuated considerably. In 1950 the estimated per capita consumption of pork was 10.3 pounds. After dropping to a low of 8.6 pounds per capita in 1965, this figure went up to 9.9 pounds in 1970. The main cause of the decrease in pork consumption was the structural organization of this young industry, which has led to poor market coordination and relatively high prices.

Other red meats, such as lamb and goat, have been characterized by an uneven production and availability. So far they have contributed only a small part of the total consumption of meat, and their demand fluctuations do not seem to affect the demand for other meat products.

Income Elasticity of Demand

The income elasticity of demand is one of the most important factors affecting demand because it gives an indication of the response in quantity demanded which can be expected to result from a change in consumer income.

Little research has been conducted in Venezuela to investigate consumer expenditures according to their average income. Of the research which has been undertaken, the most valuable seems to be the research directed by the Office of National Coordination and Planification (CORDIPLAN) in 1962;[2]

[2]CORDIPLAN, "Primera Encuesta Nacional de Ingresos y Gastos Familiares en Venezuela," 1965.

and the Central Bank of Venezuela (BCV) in 1968-1969.[3] Substantial differences exist between the research areas covered by the two agencies. On the one hand, the CORDIPLAN research covers almost the whole country, presents the consumption data in terms of units of weight or volume per family, and has classified the income per family into two broad levels that seem to be very arbitrary. On the other hand, the BCV research has been published by regions, and data are represented in terms of consumption value and according to eight different levels of family income. Data from the BCV are preferred for the purpose of this study, and are presented in Table II-4.

Analysis of these data indicates that families with higher incomes expend more money on meat than do families with lower incomes. CORDIPLAN research findings indicate the same trends. Nevertheless, there are disparities between the elasticities based upon expenditures and quantity because, as incomes rise, families purchase higher quality meat. Therefore, total consumption of meat at the various income levels is less dissimilar in terms of quantity than when measured in terms of expenditures.

The income distribution in Venezuela is unequal not only between rural and urban zones, but among regions and

[3]See for example: CORDIPLAN, "Los Gastos Familiares y el Indice del Costo de Vida en el Area Metropolitana de Caracas," 1968; and BCV-VLA, "Estudios sobre Presupuestos Familiares e Indices de Costo de Vida para las Ciudades de Merida, Valera, San Cristobal y Barinas," 1969.

TABLE II-4

MONTHLY FAMILY EXPENDITURES IN FOOD, RED MEATS, AND POULTRY MEAT, BY INCOME LEVEL IN SELECTED CITIES, VENEZUELA 1968

(Bolivars per Month)[a/]

	CARACAS			MERIDA		
	Total Expenditures In			Total Expenditures In		
Income Level	Food	Red Meat	Poultry Meat	Food	Red Meat	Poultry Meat
Less than 500	330	53	13	272	51	8
501 - 1000	457	75	17	404	76	13
1001 - 1500	510	87	22	512	103	20
1501 - 2000	573	101	25	544	113	29
2001 - 3000	725	134	34	704	142	42
3001 - 4000	799	146	32	710	136	44
4001 - 5000	906	164	37	1,107	214	46
more than 5000	1,105	202	35	960	190	45

a/ Bs. 4.5 = $ 1.0

Compiled from: CORDIPLAN, Los Gastos Familiares y el Indice de Costo de Vida en el Area Metropolitana de Caracas, 1968; and BCV-VLA, Estudios sobre Presupuestos Familiares e Indices de Costo de Vida para las Ciudades de Merida, Valera, San Cristobal y Barinas, 1969.

members of the population. Many of those receiving large incomes in Venezuela live in Caracas, the capital city, and the big cities. In general, the larger the city the larger the average income tends to be. As a result, consumption expenditures, and thus consumption of meat, is concentrated in big cities and urban areas. Therefore, data based upon urban population trends and changes should be very helpful in estimating future meat consumption.

Consumer Habits and Preferences

The analysis of consumer habits and preferences serves a very useful purpose in providing some indication of consumer behavioral and attitudinal patterns and, eventually, brings out some of the factors that may influence these patterns.

In Venezuela, although the price of poultry meat is lower than that of the average first grade beef,[4] poultry is often at a disadvantage because of consumer preferences and merchandising practices of the industry. First, consumers have shown a greater preference for beef than for any other meat. It already has been indicated that beef consumption represents more than 60 percent of the total meat consumption. Second, almost all poultry meat is merchandised as a whole bird, with feet and part of the head on, while beef is

[4]Venezuela, Ministerio de Agricultura y Cria, Anuario Estadistico Agropecuario 1970," p. 485 and 501.

classified and priced according to cuts and "quality". As a result, second grade beef has been priced just slightly higher than poultry[5] but are many times preferred because of the greater yield in number of servings.

Initially, most broilers and culled hens were bought alive and processed by consumers themselves. The growth and development of the industry has changed this pattern and today practically all poultry is sold in ready-to-cook plus form (dressed and eviscerated but with feet and part of the head on). However, in some areas consumers still prefer to buy broilers alive, rather than in ready-to-cook plus form.

In general, consumers accept frozen hens but show reluctance to buy frozen broilers. This is due, in part, to a preference developed a long time ago, when most poultry meat was imported frozen. At that time, practically no processing plants existed in Venezuela, and national production was synonymous with freshness, while frozen poultry meat frequently was thawed and spoiled because of failures in refrigeration and high holding temperatures.

Not many years ago, poultry meat was a very expensive item. At that time, poultry was a fancy article reserved for Sunday dinner or very special occasions. Although times have changed and poultry meat is cheaper and usually

[5]Venezuela, Ministerio de Agricultura y Cria, loc. cit.

available, the habit has continued for many families and poultry meat sales reach their peak during week-ends. This fact, coupled with the short shelf life of the product, has given rise to problems of diseconomies of scale because many processors have designed their plants with a capacity which is fully used only once or twice a week.

Short shelf life of the product is due mainly to inefficient processing and handling methods and unscrupulous practices which are sometimes followed by members of the industry. This has given rise to severe problems which have affected the product image. Among these problems, two should be pointed out in this section: (1) the poor appearance of the product displayed at supermarkets and meat stores, and (2) the lack of consumer confidence in product quality. Both problems have had a negative influence on consumers, who sometimes change their minds and buy a different product. These problems also are responsible in part, for the reluctance of consumers to buy frozen broilers. Therefore, there is no question about the need to improve product quality and appearance in order to improve product image and hence to motivate consumers. Achievement of this goal depends upon processors, as well as wholesalers and retailers, because of the need to improve processing and handling systems and to maintain proper holding temperatures.

Price Relationships

In addition to the general influences of population, income and consumer preferences on demand for meat, price of poultry meat also will depend upon prices of other meats and on the supply of poultry. Therefore, analysis and comparison of past price trends of various meat products will bring out some of the competitive relationships among them. The analysis is performed in three steps: (1) prices of meats, (2) long-run relationships affecting prices, and (3) seasonal fluctuations and short-run price variations.

1. Prices of meats. The average retail price of beef has been fairly stable throughout the past fifteen years. Prices dropped to a low in 1961 and increased continuously until 1968, when there was a downturn that has continued thus far. The total price variation during the whole period was six cents per pound (U.S. dollars) with average price ranging from a minimum of 55 cents to a maximum of 61 cents per pound of first grade beef.[6] If beef cattle production continues to match demand the way it has until now, prices should remain fairly stable and within the indicated range.

Pork prices also have fluctuated somewhat. They reached a peak in 1958 and diminished continuously until

[6]Venezuela, Ministerio de Agricultura y Cria, loc. cit.

1963. In 1964 the average price was higher but it went down to reach the minimum price in 1965. From there on, average prices have generally been increasing, and are expected to follow this trend in the future, due to feed prices and marketing inefficiencies.

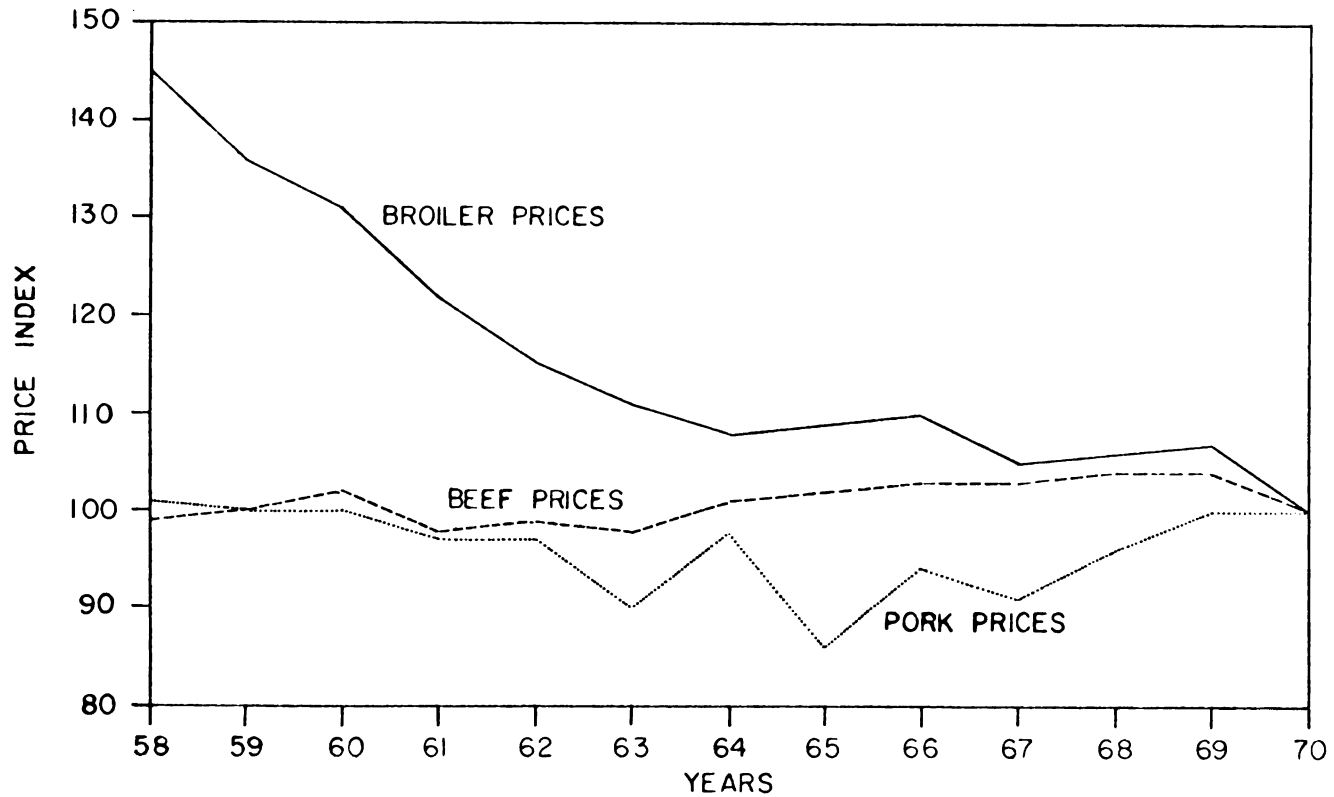
The average retail price of broilers has shown a downward trend, which will continue in the future unless changes in grain prices raise production costs.

Finally two other factors may also cause some changes in meat prices: (1) a better application of available and new techniques may increase yields per animal, or (2) an increase in price of grain may occur due to government measures to foster and protect the agricultural subsector. The latter would strongly influence prices of pork and poultry but not beef, because there are very few cattle feedlots.

2. Long-run relationships affecting prices. To understand the interaction of the prices of various meat categories, it is important to consider their movements simultaneously and in relation to one another. For this purpose, annual data are available over a period of 13 years, from 1958 to 1970, for average retail prices of chicken, beef, and pork. Obviously, a thirteen-year period does not seem sufficient for analyzing a long-run relationship, but these are the only data available.

Figure II-1 was extended by using the price data for

FIGURE II-1
INDEXES OF RETAIL PRICES FOR BROILER MEAT, BEEF AND PORK
IN VENEZUELA (1958-1970)



ELABORATED FROM: VENEZUELA, M.A.C., ANUARIO ESTADISTICO AGROPECUARIO, Selected Issues

1970 as a reference index; that is, 1970 prices equal 100 percent. Analysis of this figure indicates that broiler prices have shown a downward tendency. Since 1965, small fluctuations have been noted, but they have coincided with similar fluctuations for pork and an upward trend in beef prices.

A rapid drop in broiler prices has been caused by the adoption of technological improvements which have led to increased productivity. Further increase could be achieved at present by improving market coordination.

Wholesale general price indexes are presented in Table II-5. As can be observed, general prices have shown an steady increase so far, and they are expected to continue rising.

TABLE II-5

WHOLESALE GENERAL PRICE INDEXES

VENEZUELA 1960 - 1970

1970 = 100

Year	Wholesale Price Index
1960	78.9
1961	79.7
1962	83.5
1963	86.1
1964	89.8
1965	92.8
1966	94.0
1967	95.3
1968	96.9
1969	98.4
1970	100.0[a/]

a/Estimated by the author.

Elaborated From: BCV, "Informe Economico Correspondiente al Año 1969."

3. Seasonal fluctuations and short-run price variations. In addition to long-run relationships, fluctuations also occur in shorter periods, and may be due to seasonal variations in demand or day-to-day technical price variations.

Thus far, no research about seasonal demand for meats has been conducted in Venezuela. It is known that during holidays, particularly Christmas, demand for all meat products increases. However, it seems that seasonal fluctuations of meat consumption are not very extensive.

Price variations are subject to somewhat different patterns. Until now, the Venezuelan broiler industry has been characterized by the participation of many growers who enjoy an almost absolute freedom in programming their production. Since, under current conditions, there is no way for growers to know anything about future market prices, production is usually programmed based upon present prices and growers' own expectations. As a consequence, the industry faces periods of relative surplus and scarcity - short-run instability - because of the influence of chick placements upon the prices of broilers 11 to 12 weeks later and the effects of broiler prices upon later chick placements.

Short-run instability brings on a continuous variation in prices of broilers throughout the year, which shows an inverse relationship between average monthly prices and production data. Of course, these month-to-month fluctuation

are present at retail, wholesale, and farm levels; nevertheless, fluctuations in retail prices have not been so pronounced as in wholesale and farm prices.

Some studies have been undertaken to find out if any relationship exists between price variations and seasonal demand. Initially, a seasonal pattern was found, which showed a tendency for prices to decline during summer and early fall.[7] This seasonal pattern may be the result of either a change in demand or supply alone, or a combination of changes in both. However, no further analysis has been made since 1968, although there seemed to be a decline in demand during that period. On the other hand, prices have always reached a peak in December due to an increase in demand. These observations seem to indicate the existence of a seasonal demand pattern; however, no data are available to reflect seasonal movements in both price and production in the same direction.

Preliminary Conclusions on Demand

Although the supply side of the broiler industry in Venezuela has not yet been analyzed, it is now possible to state some preliminary conclusions on demand. Because of

[7]Alejandro Graterol-Jatar, "Comparative Study of American-Venezuelan Broiler Industry and Processing Methods," unpublished paper, Michigan State University, 1971, page 55

the difficulty in making any reliable projection on the basis of present information, and recognizing that lineal trend projections may be misleading, it will be helpful to present some of the limitations of these projections:

1. Population and per capita expenditures on all meat are rising and will continue to rise. This means that total consumption of meat will continue its upward trend, exceeding rate of population growth for the next years.

2. Consumption of meat and meat products will certainly increase, but the rate of growth on a per capita basis is likely to continue its decreasing trends. Therefore, demand conditions are more likely to be the restraining force on output expansion.

3. Meat prices will vary somewhat in the near future, according to their source. Pork prices are expected to continue increasing at a faster rate than the general price level, while cattle beef prices are likely to either stay at their actual level or rise at a more slowly rate than the general price level. Prices of broiler and poultry meat, on the other hand, will continue declining, but at a lower rate than in the early sixties, while the general price is expected to continue rising.

4. Price of feed will rise as a result of government measures to regulate imports and foster national production of grain. This will affect the broiler and hog industries, raising their production costs and, thus, their prices.

Nevertheless, this negative effect is expected to be counteracted by increased productivity.

5. Consumption of poultry meat will continue rising in the future, but the industry will face a difficult period of price-cost squeeze, in which structural changes will be needed and will be made.

CHAPTER III

FACTORS AFFECTING SUPPLY: INPUTS

INTRODUCTION

Demand factors affecting the Venezuelan broiler industry were considered in Chapter II. The next logical step of the study is to analyze the factors affecting supply. In the long-run, supply conditions can be reduced to the state of technological knowledge about production methods and the prices of goods and services used in production. In the short-run, many other considerations have to be taken into account in determining market conditions at any one time: the size of existing plants and facilities, the age and obsolescense of the equipment, the integration of stages of production, and the marketing patterns of individual firms. Analysis of these factors is presented in the next five chapters of this study. In this chapter, inputs - hatchery supply flocks, hatcheries, and feed manufacturing plants - are considered; the analysis continues through Chapter VII, considering production (Chapter IV), processing (Chapter V), marketing (Chapter VI), and organizational aspects of the industry (Chapter VII). The reason for organizing the study in this manner is to accomplish a clearer and more comprehensive discussion of the market conditions in the Venezuelan broiler industry.

Broiler Industry Inputs in Developed Countries

The broiler industry has changed drastically in the past 20 years in the United States and England. Since the end of World War II, research in the industry has been conducted successfully. The basic gains of research have been in terms of: (1) advances in genetics, resulting in the breeding of superior strains; (2) development of high energy broiler rations; (3) discovery of antibiotics and other drugs to control diseases; (4) improvements in equipment designs and innovations in technology; and (5) development of methods of coordination including grow-out contracts. These gains have revolutionized methods of poultry production, thereby increasing the scale of operations and lowering costs.

On the other hand, prices of items necessary for the production of broilers have not been reduced, while prices of broilers have shown a downward trend. This means that reductions in costs have largely resulted from technological innovations. Therefore, in order to remain in business, members of the industry have had to adopt technological and organizational innovations as soon as they could, and expand their operations to a much larger scale. The resultant disorderly expansion in facilities and capacity in the different stages of the industry, joined to the continuous price decline, has caused considerable fluctuation of production. This instability has encouraged the linking

together of successive stages of production and marketing through ownership or contract - vertical coordination, in order to achieve high production levels, improve efficiency, and reduce costs.

All these factors have favored the increase of concentration in the industry and have contributed to the creation of barriers to entry, the former because of economies of scale in production and physical distribution, and the latter because of the absolute cost advantages of established firms and the capital required to get into the integrated business.

Therefore, the major effects of technological advances on the structure of the industry have been:

1. Expansion in size and capacity of different facilities,
2. Achievement of high production levels,
3. Closer interrelationship between successive stages of the industry, and
4. Accomplishment of a high degree of market efficiency and coordination.

As far as hatcheries are concerned, expansion in size and capacity brought on the need to work at peak efficiency levels. This led hatcherymen either to make some kind of arrangement with hatching egg producers to secure supply and with broiler growers to find outlets for their products, or to go into these activities by themselves. Strict programs

of hatching egg quality control have been successfully applied; at present there are firms which have reached an average hatchability between 85 and 90 percent.

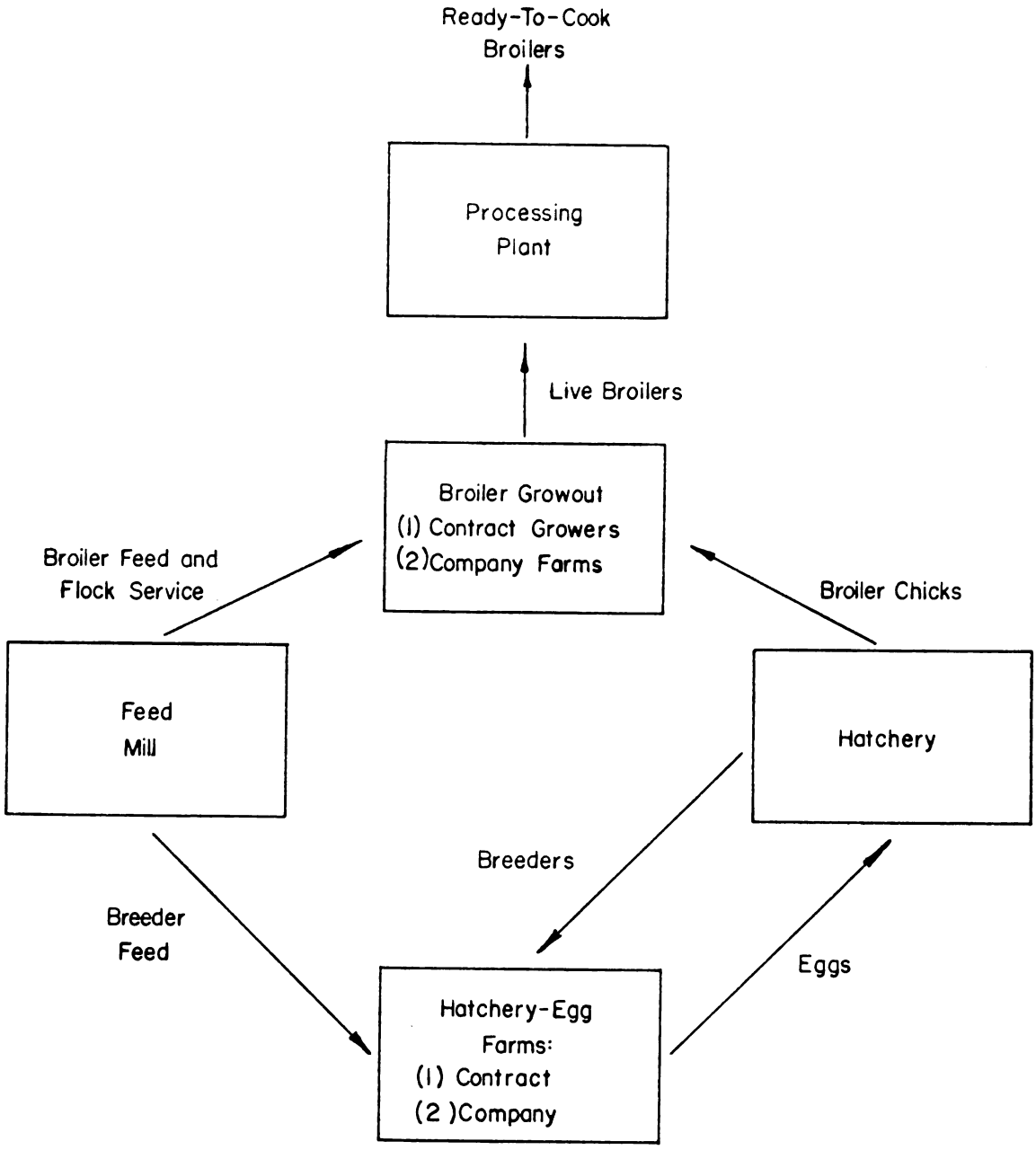
Developments in feed mills made these firms able to achieve great economies through the use of fewer laborers, to produce any formula in a short time period, to decrease inventory problems, and, of course, to expand in size and capacity. Nevertheless, a new problem was raised by the substantial capital investment required, which established the need to operate at high levels of capacity. This led feed mills to expand their activities as financiers and use credit and technical assistance as strategic factors of competition.

Actually, although all firms in the United States and England are not fully integrated, they combine at least two or more functions. The typical integrated broiler firm often has its own hatchery, feed mill, and processing plant, and depends almost entirely on contract production. This structural organization is illustrated in Figure III-1.

Broiler Industry Inputs in Venezuela

A brief summary of the role of the Venezuelan Government in the development of the broiler industry is presented before analyzing the input stages of the industry.

FIGURE III-1
FUNCTIONS OF A TYPICAL INTEGRATED BROILER IN THE UNITED STATES



SOURCE: U.S.D.A. THE BROILER INDUSTRY-and Economic Study of Structure, Practices and Problems.- P.&S.A.- I- 1967 p.7

The Government and the Development of the Industry

In the late forties and early fifties, the poultry industry in Venezuela was characterized by the great volume of imports of frozen poultry meat and eggs. Because of this situation, the government agreed to stimulate poultry production. The initial measures for achieving this goal were the establishment of controls on poultry meat imports and acquisition of different breeds of broilers and layers. This control constituted a great profit incentive for growers, because their production was substituted for imports in a market that already existed. The latter measure stimulated the increase of egg and broiler production, as well as their quality. As a result, the broiler industry experienced rapid growth and very soon it was able to supply the national demand for poultry meat. The effect that this growth had on imports of poultry meat is shown by the data presented in Table III-1.

Analysis of these data reveals that importation of poultry meat was practically eliminated by 1954. Actually, the small amount of poultry meat imported since that year consists of turkey, which is primarily demanded during the Christmas season.

The success achieved by the initial measures taken by the government gave rise to an increasing confidence, which led policy makers toward the next logical step. In July,

TABLE III-1

IMPORTS OF FROZEN POULTRY MEAT IN VENEZUELA

1950 - 1960[a/]

Year	Quantity Tons[b/]	Value $ x 10^3[c/]
1950	2,485	1,919
1951	2,440	1,768
1952	322	267
1953	30	28
1954	4	5
1955	28	29
1956	21	22
1957	24	18
1958	31	26
1959	13	10
1960	6	6

a/ Since 1960 imports were eliminated

b/ 1 ton = 2,000 pounds

c/ $ 1.00 = Bs. 4.50

Elaborated From: Venezuela, Ministerio de Agricultura y Cria, Encuesta Avicola Nacional 1963, p.2

1952[1], the measures of control were extended to include imports of broiler chicks and hatching eggs, establishing quotas according to growers' need and hatcheries' capacity. As a result, imports of broiler chicks have been totally eliminated since July, 1957[2], because the hatchery firms in the country were able and willing to supply the demand for broiler chicks. Table III-2 illustrates the evolution of the imports of broiler chicks in Venezuela. As can be observed, chick imports rose until 1953; since then they started diminishing until the second semester of 1957 when imports were finally eliminated.

TABLE III-2

IMPORTS OF BROILER CHICKS IN VENEZUELA 1951-1957[a/]

Year	Chicks
1951	1,671,869
1952	6,630,693
1953	8,305,656
1954	7,705,805
1955	7,428,784
1956	6,598,500
1957	1,197,925[b/]

[a/] Since the second semester of 1957 broiler chick imports were eliminated.

[b/] The first semester only.

Source: Pola C. Ortiz, Politica Avicola Desarrollada en Venezuela, Caracas, Ministerio de Agricultura y Cria, 1964, p. 5.

[1] Pola C. Ortiz, Politica Avicola Desarrollada en Venezuela, Caracas, Ministerio de Agricultura y Cria, 1964, p.5.

[2] Pola C. Ortiz, op. cit.

Elimination of hatching egg imports took a longer time. The policy stated in the early fifties was later strengthened by: first, requiring an official sanitary certificate, issued by an authorized agency of the exporting country; and second, establishing a decreasing annual quota of hatching egg imports. This brought on the need for increasing and improving national production so that hatcheries could satisfy their needs at a reasonable cost. As a result, hatcherymen had to make some kind of arrangement with hatching egg producers or go into this activity themselves, which led them to integrate backward. Finally, since 1968 importations of hatching eggs have been restricted to eggs for breeding chicks. Table III-3 shows the evolution of hatching egg imports in Venezuela from 1959 to 1967. As observed, the number of hatching eggs imported showed a sustained increase until 1962, when a peak was reached; since then, the amount diminished until 1968 when imports of hatching eggs for broilers were eliminated.

Right now, government policy is directed toward eliminating grain imports in the same way it did with hatching eggs and broiler chicks. The period of time to achieve this goal has not yet been fixed, but meanwhile an agricultural marketing corporation has been created to control grain imports. From now on, all grain imports have to be conducted through this corporation. This has resulted in higher prices of feed ingredients at present and in the immediate future.

TABLE III-3

IMPORTS OF HATCHING EGGS IN VENEZUELA

1959-1967[a/]

Year	Quantity Thousands	Value $ x 10^3
1959	47,506	2,557
1960	53,705	2,868
1961	53,894	3,535
1962	41,328	2,682
1963	37,570	2,744
1964	32,227	2,217
1965	19,418	1,468
1966	9,448[b/]	719
1967	7,474[b/]	558

[a/] Since 1967 Imports of hatching eggs for broilers were eliminated.

[b/] Estimated by the author.

Source: Venezuela, Ministerio de Agricultura y Cria, Anuario Estadistico Agropecuario, Selected Issues; and Pola C. Ortiz, Politica Avicola Desarrollada en Venezuela, Caracas, MAC, 1964; and Juan Mindiola, La Estructura de la Produccion Nacional de Pollos de Engorde, Caracas, MAC, 1966.

On the other hand, the industry has started toward the achievement of a new step: the substitution of imports of hatching eggs for breeding chicks. Will this goal be achieved? If so, how long will it take? The answers to these questions are somewhat difficult. They depend upon technological and economic factors which are beyond the scope of this study. However, it is quite clear that achievement of this goal would have a very important impact on hatcheries, as far as their capacity is concerned.

Finally, not only have government measures played an outstanding role in the development of the broiler industry, but they have also shared responsibility in the achievement of its present structure. Therefore, analysis of the stages of the Venezuelan broiler industry is performed in light of these observations.

Hatcheries

Since 1964, the number of hatcheries operating in Venezuela has fluctuated, as shown in Table III-4. The number of hatcheries declined from 21 in 1964 to 14 in 1965; the number continued to fluctuate until it reached 20 in 1970. This increase in the number of hatcheries during the last year may be due to the policy of contracting services developed by one of the feed manufacturers.

Number, Size, and Utilization of Capacity. As previously stated, 20 hatcheries were operating in 1970. Although

TABLE III-4

NUMBER AND LOCATION OF HATCHERIES, BY STATES, IN VENEZUELA

1964 - 1970

State	1964	1965	1966	1967	1968	1969	1970
Distrito Federal	3	1	2	2	1	-	1
Anzoategui	1	1	2	2	2	1	1
Aragua	3	1	1	1	1	1	2
Bolivar	1	1	-	-	-	-	-
Carabobo	1	1	2	2	2	2	3
Lara	1	-	1	-	1	1	1
Merida	1	1	1	1	1	1	1
Miranda	5	3	3	2	3	4	4
Zulia	5	5	5	5	6	7	7
TOTAL	21	14	17	15	17	15	20

Source: Venezuela, Ministerio de Agricultura y Cria, Anuario Estadistico Agropecuario, Selected Issues.

it was not possible to find the individual capacity of each hatchery, annual capacity and annual rate of use data are presented in Table III-5, classified by states. These data were obtained from government publications, which did not reveal hatchery egg capacities or the manner in which the annual capacity was estimated. Using the data furnished by government agencies, the rate of use of annual capacity was recalculated by the author because of criterion divergencies with official estimations. These were based on the number of chicks sold, assuming 75 percent of hatchability. The author assumed that 50 percent of the egg-type chicks are sacrificed because they are males; therefore, estimations of the author are based upon chicks hatched rather than sold, and the same 75 percent of hatchability. The high rates of capacity use shown in Table III-5 are understandable because all but one hatchery hatch egg-type chicks in addition to broiler-type chicks. Further analysis of the same data indicates that hatcheries in the Central States - Aragua, Carabobo and Miranda - show the highest level of use. As will be indicated later, these states also show the highest broiler production density.

Hatchability and Broiler Chick Production by Breed. According to data furnished by some hatcheries, hatchability fluctuates somewhat between 70 and 80 percent in Venezuela. At present, the more efficient hatcheries are making efforts to achieve and maintain an average hatchability around

TABLE III-5

ANNUAL CAPACITY AND ANNUAL RATE OF USE OF HATCHERIES, AND CLASSES OF CHICKS AS PERCENTAGE OF THOSE HATCHED, BY STATES, IN VENEZUELA -1970

State	Hatcheries	Annual Capacity[a]	Rate of Use of Annual Capacity[b]	Classes of Chicks as Percentage of Those Hatched[c]	
				Broiler Type	Egg-Type Pullets
	Number	Number	Percent	Percent	Percent
Distrito Federal	1	4,761,476	54.4	89.2	5.4
Anzoategui	1	4,466,883	75.0	100.0	-
Aragua	2	10,416,586	79.2	76.2	11.9
Carabobo	3	60,472,942	79.4	84.8	7.6
Lara	1	1,151,712	44.8	54.4	22.8
Merida	1	2,821,694	76.0	64.2	12.9
Miranda	4	17,485,962	87.2	52.2	23.9
Zulia	7	32,495,964	59.1	91.7	4.1
TOTAL	20	134,073,219	74.0	80.7	9.7

a/ Taken as given by government agencies. They do not indicate how it was estimated, neither reveal hatchery egg capacity by State.

b/ Eggs set annually divided by annual capacity.

c/ Assuming that 50 percent of egg-type chicks hatched are males.

Elaborated From: Venezuela, Ministerio de Agricultura y Cria, Produccion de Pollitos Bebe 1970.

80 percent, while hatcheries that have shown inferior performance thus far, are trying to reach the 75 percent level.

The different broiler breeds grown in Venezuela are presented in Table III-6. This table shows the total broiler chick production by breed in 1970. As can be observed, Cross Vantress, Vantress, and Vantress A. A. comprised more than 80 percent of total production.

Chick Sale Practices. Chick sale practices vary from firm to firm. In general, if a hatchery belongs to or has an agreement with feed mills, these mills usually determine the policy to follow because they supply all items growers require for their operation. On the other hand, if a hatchery is a member of a small owner-integrated complex, chicks are mainly used for their operation; therefore, sales outside of their complex are made on arrival terms.

Price Received and Hatching Margins. Hatching margins refer to the difference between chick selling price and egg cost per salable broiler chick. Table III-7, which is used to illustrate this section, was elaborated from data furnished by a sample hatchery in Venezuela.

TABLE III-6

BROILER CHICK PRODUCTION BY BREED IN VENEZUELA

YEAR 1970

	Production Units	Percentage %
Cross Vantress	23,091,618	38.43
Vantress	15,743,578	26.20
Vantress A.A.	9,965,088	16.59
Peterson	1,582,589	2.63
White Rock	2,820,105	4.69
White Cornish	1,682,169	2.80
Golden Hubbard	159,640	0.27
Arbor Acres	1,732,768	2.88
Dark Males	717,716	1.20
Sex Link	633,745	1.06
Warren S.S.L.	538,019	0.90
Pilch	360,407	0.60
Rhode Island	206,607	0.34
Leghorn	86,922	0.14
Hubbard	743,199	1.24
Plymouth	1,850	-
Hy Line	18,092	0.03
TOTAL	60,084,112	100.00

Source: Venezuela, Ministerio de Agricultura y Cria, Produccion de Pollitos Bebe 1970, p. 12.

TABLE III-7

AVERAGE SELLING PRICE FOR CHICKS, HATCHING MARGINS AND ADDITIONAL SELECTED DATA FOR A SAMPLE HATCHERY IN VENEZUELA. 1967-1971

Year	Average Selling Price per Salable Chick ¢	Average Cost per Hatching Egg ¢	Average Hatch-ability %	Total Egg Cost per Salable Chick ¢	Margin Over Egg Cost per Salable Chick ¢
1967	18.9	11.4	74.3	15.3	3.6
1968	17.8	10.5	75.2	14.0	3.8
1969	15.6	9.3	77.7	12.0	3.6
1970	15.6	9.4	76.7	12.2	3.4
1971	16.7	10.1	79.3	12.7	4.0

Source: Private Sector (unpublished data).

The small hatching margin per salable broiler chick is mainly due to economies of scale and to labor cost, which in Venezuela is a lot lower than in the United States and England. The sample plant is the biggest in the country, and at present is expanding its capacity from 42 to 54 incubators Chick Master Model 66.

Hatching Egg Farms

Hatching egg farms were fostered in Venezuela by measures of protection established by the government and in very close association with hatcheries. The strict sanitary control required, the risks and difficulties which are

characteristics of hatching-egg production, and the managerial skill necessary to produce eggs at reasonable prices made hatcheries willing to have their own flocks and achieve agreements with producers whose facilities and production practices were recognized as appropriate. Therefore, just a selected group of people have been able to get into this stage of the broiler industry, in which mass production techniques have been applied and the resulting economies of scale have allowed very large flocks and lower costs.

Number, Size, and Location of Farms. Initially, there were many farms with a small production of hatching eggs. Because of the poultry industry's growth, these farms either disappeared or specialized in the production of broiler or eggs. The fact is that the number of hatching-egg farms is greatly reduced at present. The author has made some estimations based upon the results of the national survey of poultry farms conducted by the Venezuelan Ministry of Agriculture and Animal Husbandry (MAC)[3] in 1970. Although this survey indicates the total number of farms, it does not establish any difference between table-egg and hatching egg farms. The author's estimations were made after comparing the number of hatching eggs, layers, and cockerels recorded for each region with his own knowledge. Therefore, these

[3]MAC = Ministerio de Agricultura y Cria.

estimations may deviate somewhat, but, in general, they serve a very useful purpose as far as illustration of the structure of this stage is concerned. These estimations are presented in Table III-8. As can be observed, almost half of the 25 farms have flocks larger than 20,000 layers. On the other hand, the number of layers in almost all the other farms is very close to the upper limit of their classification range.

Production of Hatching Eggs. Production of hatching eggs in Venezuela has shown a sustained increase. As formerly stated, imports have been eliminated since 1968, when national production was able to supply hatchery demand. Table III-9 contrasts production and imports of hatching eggs from 1962 to 1970.

TABLE III-8

NUMBER, SIZE, AND LOCATION OF HATCHING-EGG SUPPLY FARMS, BY STATES, IN VENEZUELA

1970[a/]

	Number of Layers in Flocks			
	Less than 10,000	10,001 - 20,000	more than 20,001	Total
Distrito Federal	-	-	2	2
Aragua	-	-	1	1
Bolivar	1	-	-	1
Carabobo	-	2	3	5
Merida	-	1	-	1
Miranda	1	1	2	4
Portuguesa	1	-	-	1
Sucre	-	1	-	1
Tachira	1	-	1	2
Trujillo	1	-	1	2
Yaracuy	-	-	1	1
Zulia	1	2	1	4
	6	7	12	25

a/ Size estimated by number of layers in flocks.

Estimated from: Venezuela, Ministerio de Agricultura y Cria, Encuesta Avicola Nacional 1970.

TABLE III-9

PRODUCTION OF HATCHING EGGS IN VENEZUELA

1962 - 1970

(Thousands)

Years	National Production	Imports
1962	6,849	41,328
1963	12,816	37,570
1964	32,701	32,227
1965	41,589	19,418
1966	53,577	9,448 a/
1967	62,128	7,474 a/
1968	71,220	b/
1969	78,237	b/
1970	89,963	b/

a/ Estimated by the author

b/ Imports of hatching-egg for broilers was eliminated in 1967. The data correspond to hatching-egg for breeding chicks and they are not available.

Source: Venezuela, Ministerio de Agricultura y Cria, Produccion de Pollitos Bebe 1970, p.5

Prices Received by Producers. Prices of hatching eggs do not change during the year as broiler prices do. Thus far, their price changes have been a result of increasing efficiency and feed price variations. In 1965, the price of hatching eggs imported from the United States was $0.875 a dozen (FOB New York). Since 1965, the prices received by hatching egg producers in Venezuela have changed as follows:

TABLE III-10

CHANGES IN HATCHING EGG PRICES IN VENEZUELA

1965 - 1971

Date	Price $/dozen	Index 1971 = 100
1965	1.211	100.0
02-20-1966	1.367	112.8
12-01-1967	1.256	103.7
06-07-1968	1.111	91.7
09-02-1969	1.122	92.7
05-06-1971	1.211	100.0

Source: Confidential

The latest increase corresponds to the latest increase in feed price which occurred in 1971. Producers are also eligible for a bonus if hatchability results are higher than 75 percent. The amount of this bonus is directly proportional to hatchability in excess to 75 percent.

Feed Mills

Feed mills have played a very important role in the growth and development of the Venezuelan broiler industry so far, because they have been the major source of financial and technical assistance to broiler growers and egg producers. Since the very beginning, there has been in Venezuela a persistent tendency toward integration and coordination of the various phases of the broiler industry. The trend started with the installation of hatcheries and development of hatchery supply farms, and continued through processing plants. Recently, because of price instability, strategic movements have been directed toward the integration of broiler production through both ownerships and contracts. Of course, feed mills have not been the only marketing channel captain.[4] Some growers also expanded their operations: backward through hatcheries to hatching egg supply flocks, and forward to processing and marketing of the final product. This trend and the fact that feed is the most costly item in both hatching egg and broiler production are reasons that make it necessary to consider feed mills in this study of the Venezuelan broiler industry.

Number and Location of Feed Mills. Although some reports have indicated the existence of nearly 20 feed mills

[4]In this study marketing channel captain is understood as the firm or stage which exercise control on or stipulates marketing policies to other channel members.

in Venezuela,[5] most of them are very small units owned by stock farmers, who use them in mixing feed for their animals. Therefore, for the purpose of this study, it is convenient to consider only the seven commercial feed manufacturers that operate in the country. Of these, the four major firms are located in the Central region of the country and the others in the Western region, the former being bigger and more efficient than the latter. (See Table III-11).

TABLE III-11

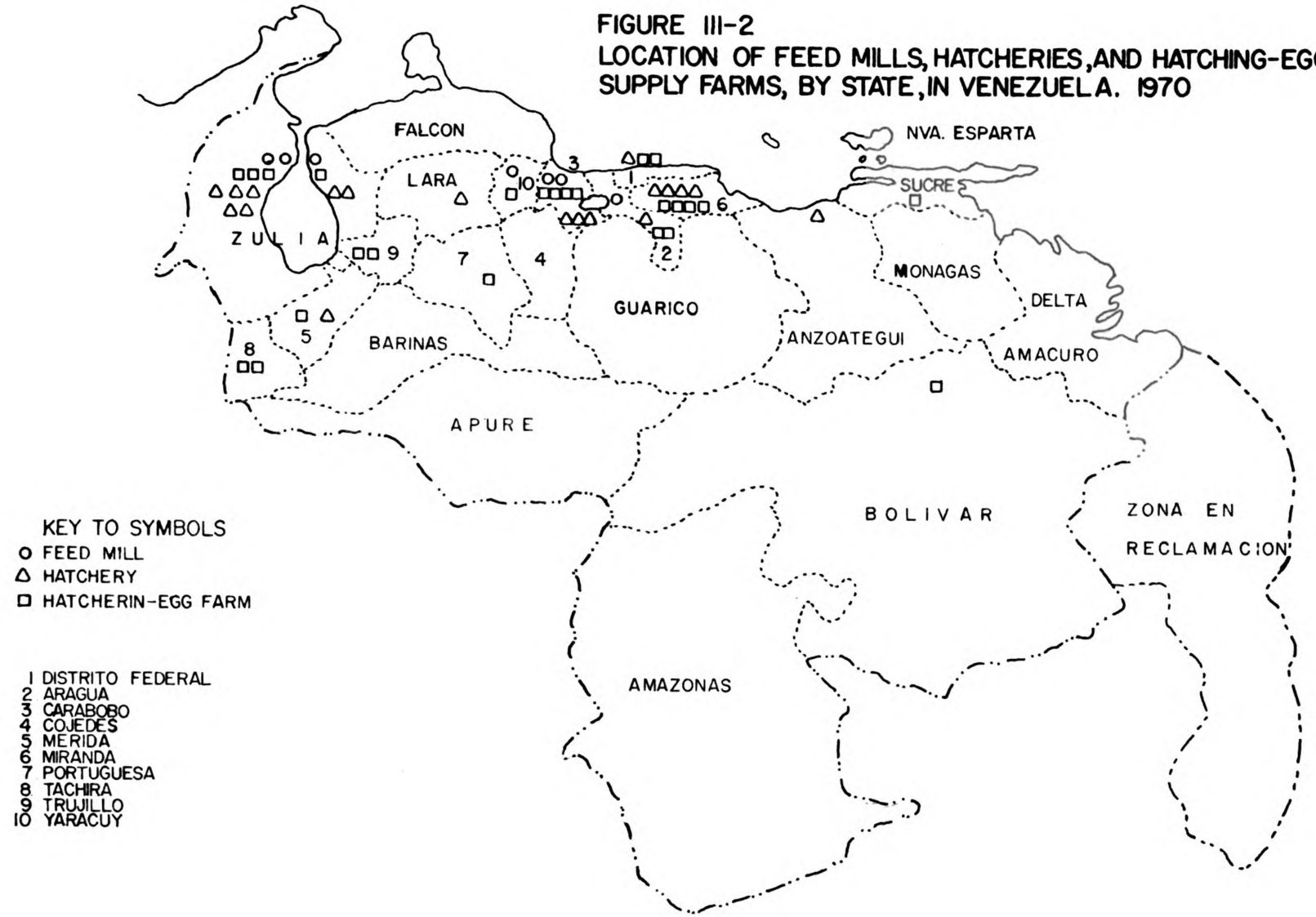
NUMBER AND LOCATION OF THE MAJOR FEED MILLS, BY STATES, IN VENEZUELA (1971)

State	Number
Aragua	1
Carabobo	2
Yaracuy	1
Zulia	3
TOTAL	7

Figure III-2 illustrates the location of hatching-egg supply farms, hatcheries, and feed mills in Venezuela. As can be observed, they are mostly concentrated in the Central region of the country which is also the largest consumption region.

[5]Ministerio de Obras Publicas, Direccion de Planeamiento, "Analisis de la Region Central. III. Economia. Industria Manufacturera," Caracas, 1965, p. 77.

FIGURE III-2
LOCATION OF FEED MILLS, HATCHERIES, AND HATCHING-EGG SUPPLY FARMS, BY STATE, IN VENEZUELA. 1970



Actually, the number of firms in relation to the size of the market, as well as the capital investment required and the pressure to increase efficiency, make it very unattractive for new firms to get into the feed mill business.

Types of Feed Produced and Sources of Feed Ingredients. All the feed manufacturers under consideration service livestock and dairy producers, as well as poultry producers. Therefore, they manufacture many different products. Table III-12 illustrates production of feed by subsectors for selected years during the period 1950 - 1970. It also serves to show the impact on feed production caused by the extraordinary growth of the poultry industry and the recent upward trend of the hog industry. Production of poultry feed in Venezuela has increased from 4,500 tons in 1950 to 451,000 tons in 1970; increasing from 26.5 percent of total feed production in 1950 to 69.8 percent in 1965, dropping then to 67.0 percent in 1970 because of the significant growth in hog feed production during the last five years.

Feed ingredients are obtained from national and foreign sources in a proportion which varies according to the item as follows: fish flour, 1/12 national, 11/12 imported; cereals and grains, 2/10 national, 8/10 imported. Fish flour is mainly imported from Peru, while cereals and grains are from the United States.

Prices of feed ingredients depend upon the volume and

TABLE III-12

FEED PRODUCTION, BY SUBSECTORS, IN VENEZUELA

SELECTED YEARS 1950 - 1970

A. TOTAL PRODUCTION (Thousands of Tons[a/])

Subsector	1950	1955	1960	1965	1970
Cattle	11.0	35.6	44.5	77.6	72.1
Hog	0.3	0.8	16.0	65.5	145.9
Poultry	4.5	36.7	126.4	337.4	451.0
Others	1.4	1.8	2.0	2.2	4.1
TOTAL	17.2	74.9	188.9	482.7	673.1

B. PERCENTAGE

Cattle	64.1	47.5	23.6	16.1	10.7
Hog	1.5	1.1	8.5	13.6	21.7
Poultry	26.5	49.1	66.8	69.8	67.0
Others	7.9	2.3	1.1	0.5	0.6
TOTAL	100.0	100.0	100.0	100.0	100.0

[a/] 1 Ton = 2,000 pounds

Calculated From: Venezuela, Ministerio de Agricultura y Cria, Anuario Estadistico Agropecuario, Selected Issues.

the season or time when the purchase is made. Although this condition allows some fluctuation in feed costs, savings are not shared directly with farmers because feed prices remain constant year around. Feed prices are regulated by the government and, so far, modifications have been authorized only because of significant changes either in the foreign-national ratio of feed ingredients or in the price of foreign raw material. The last change in feed prices was in 1971 due to government measures aimed at the substitution of national production of grains for imports. The former are more expensive than the latter; therefore, the change in feed price was upward.

Feed Delivery and Credit Practices. Charges for delivery of feed vary with volume delivered, distances from mill to farms, and form in which feed is delivered - bagged or in bulk. Delivery charges and prices are higher for bagged feed than for feed delivered in bulk. Finally, the practice of picking up feed at mills is very common; however, it doesn't account for a high proportion of total production.

Sales by feed mills to broiler growers can be classified into those for cash and those under short-term and long-term credit arrangements. The first allows for a discount from the list price, while the second and the third depend upon the terms of the agreement. The most common short-term financing agreements practiced in Venezuela are:

1. Open account. Under this plan the grower buys feed, chicks, medicine, and other items from the feed mill on "open account" and pays for them when broilers are marketed. The grower is responsible for payment of the account.

2. Labor contract plus bonus based on feed conversion. This is a very recent plan. Under this plan, growers are paid for their labor on a guaranteed basis per broiler per week, plus a bonus based on feed conversion. The feed mill supplies all feed, chicks, medicine, and other items, and growers supply the house, equipment and labor required for growing broilers.

3. Price guaranteed under share contract. This is another recently developed contract. Under this plan the feed mill furnishes the feed, chicks, medicine, and other items to the grower, charging them to the grower's account. The grower provides the house, equipment, and the labor necessary to grow the chicks, and he is guaranteed a specified price at market time. When the price is higher than the guaranteed price, the difference is shared by grower and contractor on the 90-10 basis (90% to the grower and 10% to the contractor).

Feed Price Variations. Feed prices are regulated by the government and do not change during the year. Feed mills have also arrived at a tacit agreement dealing with discounts. Therefore, although the foregoing agreement is

sometimes disregarded, competition among feed mills is based upon product quality and financial and technical assistance.

Since 1958, the price of feed has increased several times because of ingredients prices, as shown in Table III-13. The reason for the last change was already explained.

TABLE III-13

CHANGES IN BROILER FEED PRICES

1958 - 1971

Date	Price $/bag[a/]	Index 1971 = 100
02-01-58	5.78	75.3
02-15-64	6.39	83.2
03-01-65	6.59	85.8
05-15-71	7.68	100.0

a/ 1 bag = 88 pounds

Source: Private sector (unpublished data).

Final Considerations

This Chapter was presented in order to show the structural highlights of three stages of the Venezuelan broiler industry: feed mills, hatching egg supply farms, and hatcheries. The data shown correspond to all the available information obtained from government agencies and private sectors. Although the data are not the best, they have

been very helpful and clear enough to achieve our goal. Therefore, it is possible to conclude that:

1. All three stages of the Venezuelan broiler industry are highly concentrated because of the limited market for broilers and economies of scale in production.

2. All the stages are vertically integrated with the feed mill usually being the channel captain.

3. Feed mills operate in an oligopolist market, in which financial and technical assistance are the strategic factors of competition.

4. Hatcheries are linked to hatching-egg supply farms either by contract or direct operation. They work together toward improved egg quality. Hatcheries are associated with other stages of the channel by ownership or contract, frequently the feed mill.

CHAPTER IV

FACTORS AFFECTING SUPPLY: PRODUCTION

INTRODUCTION

Broiler production practices have changed since the end of World War II because of the intensive research activity devoted to developing new technology and improving efficiency in the poultry industry. The major achievements that have influenced broiler production have been: (1) the development of new broiler strains with better meat quality, (2) the decrease in flock disease risks due to an improvement in control, (3) the increase in efficiency of feed utilization, (4) the reduction in handling because of increased mechanization, and (5) the reduction in housing space needed per broiler. These achievements have influenced the growth and development of the broiler industry in all the countries in which it exists, mainly because they have made it possible to shorten the broiler growing period, reduce labor and other costs per pound of broiler, and increase the scale of growing operations. The foregoing gains and their effects on the structure of the broiler industry in developed countries and Venezuela are considered and discussed throughout the chapter.

Broiler Production in Developed Countries

Changes in broiler production have been similar in most developed countries. Therefore, although information may be obtained from several countries, data from the United States have been selected to illustrate this section.

Production of broilers in the United States increased from 513 million birds in 1949 to a number close to 3 billion in 1970. During the same period, broiler prices and costs were reduced by more than 50 percent. Along with this reduction in prices and costs have come technological advances, which have:

1. Shortened the broiler growing period from 12 to 13 weeks in 1949 to 8 or 9 weeks in 1970.

2. Increased efficiency in feed utilization by reducing the feed required per pound of live broiler from about 3.5 pounds in 1949 to somewhat around 2.2 pounds in 1970.

3. Saved in labor time because of innovations in the arrangements for automatic feeding, shorter growing periods, and larger flocks. Barton A. Westerlund[1] indicated that poultry growing productivity almost doubled between 1944 and

[1]Barton A. Westerlund, "Broiler Market Prospects for the Independent Processor, with Special Reference to Arkansas," Little Rock, University of Arkansas, 1963. pp. 29 and 91.

1950, while productivity per man-hour in the whole poultry enterprise increased 136 percent from the 1947-1949 average to 1960. During the same period, the output per man in the red meat industry increased only 14 percent.

4. Increased the flock size handled by each farmer. The size of broiler flock handled at one time by a farmer has changed from a few hundred in the mid-30's, to a size between 7,000 and 10,000 birds in the early post-war years, to a flock size ranging from 20,000 to 30,000 chickens at the present time.

Actually, further gains in production efficiency are expected, but it seems very improbable that these gains will be of the same magnitude as those achieved in the period from 1949 - 1970.

All these changes have affected the structure of the production stage of the broiler industry. The main effects have been concentration of production in certain areas, decrease in the number of farms, and increase in the number of birds per farm. Production is mostly concentrated in the southern states. According to the 1964 census of agriculture,[2] the number of farms producing broilers in the United States declined from 42.2 thousand in 1959 to 35.1 thousand in 1964. On the other hand, the size of broiler farms

[2]Fred L. Faber and Ruth J. Irwin, "The Chicken Broiler Industry: Structure, Practices, and Costs," USDA, Mktg. Res. Rpt. 930, 1970, p. 7.

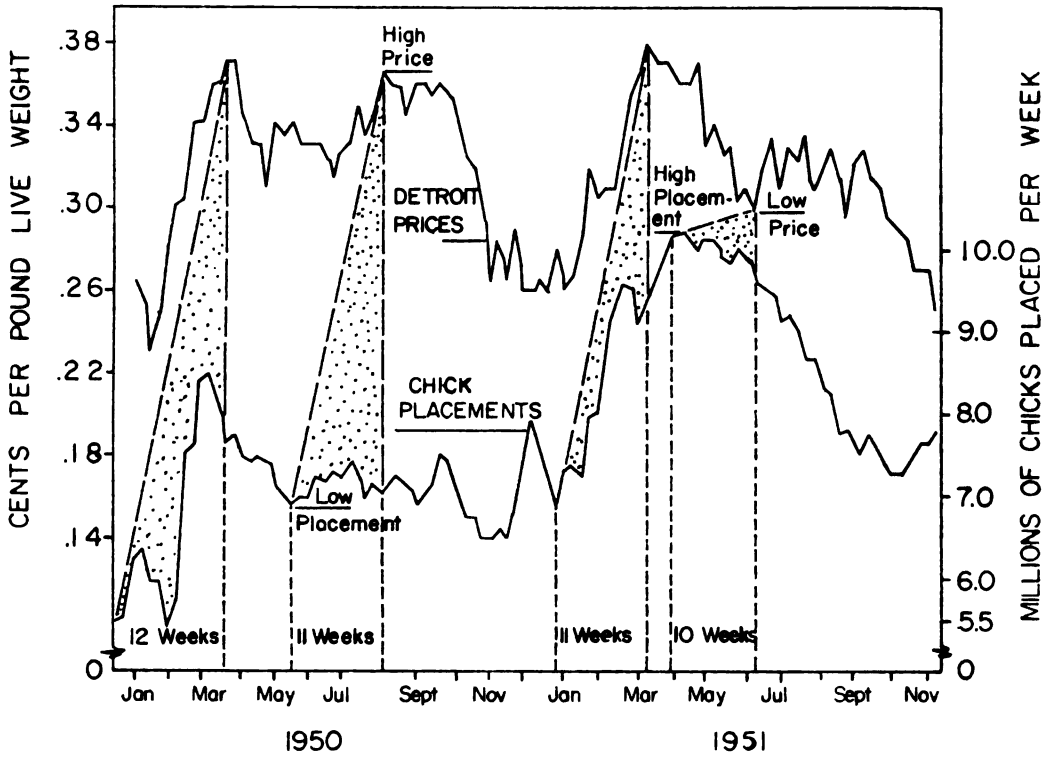
increased in such a way that 43 percent of the output came from farms producing 100,000 birds or more per year, 23 percent from farms producing 60,000 to 99,999 birds, and 23 percent from farms producing 30,000 to 59,999 birds. Of course, these figures have changed since 1964, so that fewer and larger farms exist today.

Two other production factors should also be indicated. First, the value of production has been increasing as a result of substantial increases in pounds produced, although average prices received by growers have had a downward trend. Second, a great percentage, 90 to 95 percent, of all commercial broilers produced in the United States at the present time is grown either under contract with or directly by integrated firms.

Some Facts about Prices and Production

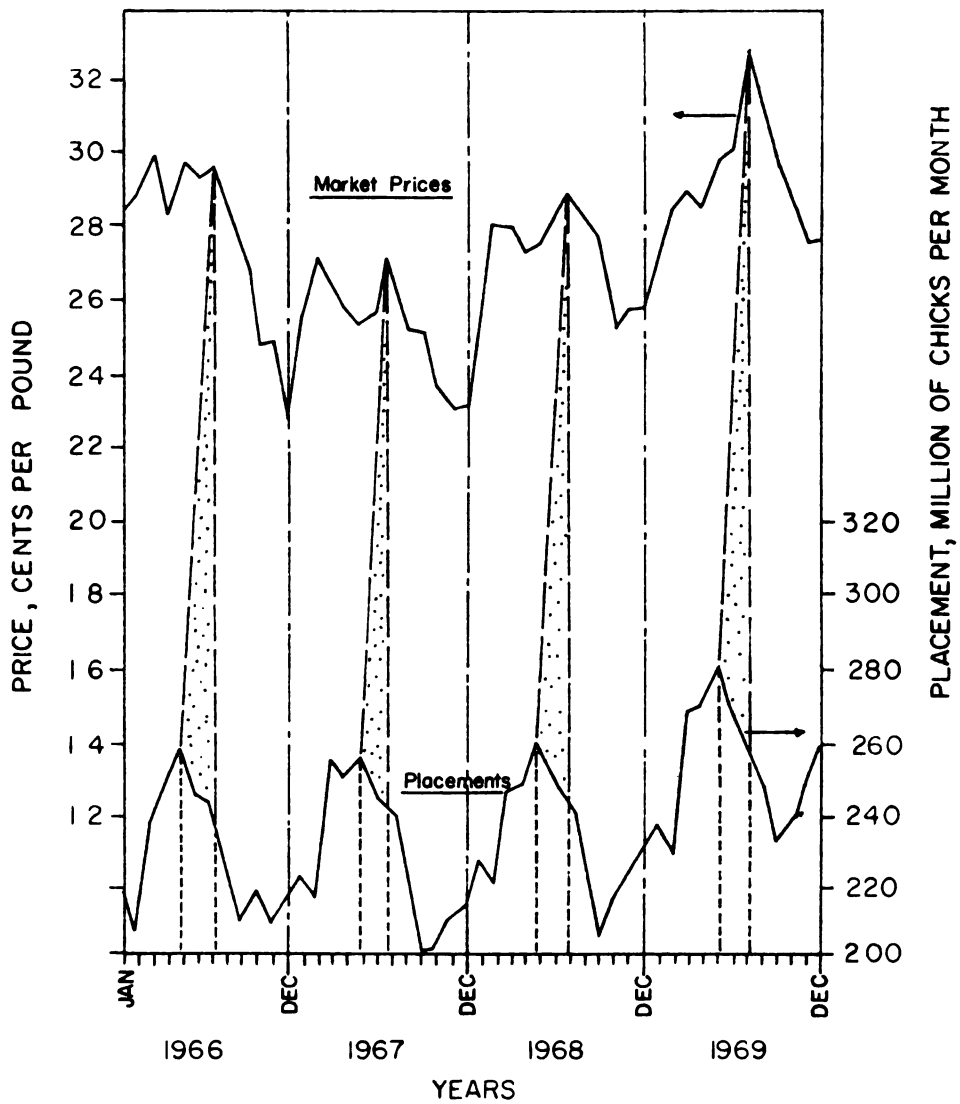
A very interesting aspect of understanding the development of the actual structure of the American broiler industry is the analysis of the relationship between prices and production. To achieve this purpose two sets of data are presented and discussed in Figures IV-1 and IV-2. Figure IV-1 shows prices of live broilers in Detroit and the number of chick placements in seven commercial broiler areas in the United States during the years 1950 and 1951. This figure, as well as the analysis of it, are based upon a paper written

FIGURE IV-1
PRICES OF LIVE BROILERS IN DETROIT AND THE NUMBER OF CHICK PLACEMENTS IN 7 COMMERCIAL BROILER AREAS IN THE UNITED STATES



SOURCE: H.E. LARZELERE: SOME FACTS ABOUT BROILER PRICES
MICHIGAN FARM ECONOMICS for DECEMBER 1951

FIGURE IV-2
BROILER CHICKS PLACEMENTS AND THE NINE-CITY WEIGHTED WHOLESALE AVERAGE PRICES OF READY-TO-COOK BROILERS IN THE U.S.A. (1966-1969)



SOURCE: U.S.D.A., POULTRY AND EGG SITUATION.-SELECTED STATISTICS

by Henry Larzere in 1951.[3] Figure IV-2 shows the nine-city weighted average prices of ready-to-cook broilers and the number of broiler chicks hatched in the United States, according to data published by the USDA.[4]

Figure IV-1 illustrates: (1) the effect of chick placements upon the prices of broilers 11 to 12 weeks later, and (2) the effect of broiler prices upon later placements during the 1950-1951 period. As can be observed, in both years the highest price periods were reached in March, 11 to 12 weeks after relative low rates of chicks placements. This length of time coincided with the broiler growing period of the early fifties; therefore, it meant that the growing period was the restraining factor for a more exact relationship between placements and prices. Further analysis of the figure seems to indicate the existence of two kinds of low price periods: (1) first, those that were influenced by the relatively high rate of placements 10 to 12 weeks earlier, such as the last weeks of April and June in 1950 or the second week of June and the last week of August in 1951; and (2) second, the low price periods that took place during the last months and the first weeks of each year, which were due to a seasonal tendency of demand. On the other hand, a similar relationship may also

[3]Henry E. Larzere, "Some Facts about Broiler Prices," Michigan Farm Economics, 1951.

[4]USDA, Poultry and Egg Situation, Selected Statistics.

be found as a consequence of the effect of broiler prices upon later placements. Finally, it is also possible to observe that in the period under consideration the rate of chick placements changed according to the rate of broiler prices, so that increasing rates of placements frequently followed rising broiler prices, and falling prices were followed by decreasing rate of placements.

The situation observed in the early fifties became worse later, mainly because of a disorderly expansion in facilities and capacity. This unstable performance, together with the continuous decline in price and the need for firms in other stages of production to operate at high capacity levels, encouraged adjustments between outputs and inputs of firms in successive stages and led to vertical integration. The effects of vertical integration on the price-production relationship are shown in Figure IV-2. From the figure it is possible to observe that the highest price periods for the four years under consideration were reached in the third quarter of each year. This is due to a seasonal demand, which usually reached its peak during summer and declined to its minimum in the last quarter of the year. Figure IV-2 indicates that more broilers can be marketed in July than in December at the same price. The industry only partially adjusts production to meet these changes in market demand. This accounts for high prices in July with a high rate of marketings, and low prices in December with a low rate of

marketings.

Prices do not seem to affect production to the degree that they did in the early fifties, but now other factors in the channel are also taken into consideration. First of all, decision centers have been reduced in number and moved from the farm toward integrators. As a result, decisions are now considered a function of the whole integrated system rather than a function of an individual stage, because integrators are primarily interested in the overall economic performance. This means that they take into account the gain and loss trade-off among the different stages of the system, so that production is reduced according to the relationship between the expected losses from production and the expected losses they would cause for all the other stages. Therefore, although production still reacts to changes in price, the response time has changed from 11 to 12 weeks in the early fifties to a lot longer period at the present time; thus, short-run variations are reduced.

Broiler Production in Venezuela

Broiler production has changed significantly in many respects during the past 20 years in Venezuela. Improvements in breeding, feeding, and disease control have increased production efficiency. Mass production techniques are being applied in such a way that the resulting economies

of scale have led to a reduction in the number of flocks. However, there is a long way to go and more drastic changes are expected in the coming years.

Number, Size, and Location of Farms

According to data published by the Ministry of Agriculture and Animal Husbandry,[5] the total number of poultry farms in Venezuela declined from 1,755 in 1961 to 1,102 in 1970. This implies a reduction of more than 37 percent, most of which occurred on the small farms. In 1970, the number of farms raising broilers was estimated at 500. Of this number, 52 were reported as mixed farms because they were also producing eggs. Table IV-1 shows the number, size, and location of broiler farms, by states. As can be observed, more than 52 percent of the total number of broiler farms (262) reported flocks smaller than 10,000 birds at one time, while only 29 farms (something near 6 percent) had flocks larger than 50,000 broilers. Among the latter, 22 farms were indicated by the private sector to be holding flocks larger than 100,000 chickens. As a result of the size distribution, it is obvious that the output of small farms constitutes a substantial part of the total output.

[5]Venezuela, Ministerio de Agricultura y Cria, "Encuesta Avicola Nacional 1970."

TABLE IV-1

NUMBER, SIZE, AND LOCATION OF BROILER FARMS, BY STATES, IN VENEZUELA - 1970

States	Size in Number of Broilers					
	Less than 5000	5001-10000	10001-20000	20001-50000	More than 50000	TOTAL
*Distrito Federal	3	3	8	4	-	18
Anzoategui	12	7	2	3	5	29
Apure	3	-	-	-	-	3
*Aragua	2	1	8	16	3	30
Barinas	-	-	-	-	-	-
Bolivar	1	2	1	3	1	8
*Carabobo	12	3	5	6	2	28
Cojedes	5	-	1	2	-	8
Falcon	2	-	-	2	-	4
Guarico	5	-	-	2	-	7
Lara	2	1	1	-	3	7
Merida	2	-	-	-	-	2
*Miranda	14	49	60	47	12	182
Monagas	3	-	-	-	-	3
Nueva Esparta	2	1	1	-	-	4
Portuguesa	1	-	-	-	-	1
Sucre	5	1	1	-	-	7
Tachira	4	-	-	-	-	4
Trujillo	1	-	-	-	-	1
Yaracuy	1	-	-	-	-	1
Zulia	68	46	22	14	3	153
VENEZUELA	148	114	110	99	29	500

*Central States

Source: Venezuela, Ministerio de Agricultura y Cria, Encuesta Avicola Nacional 1970.p.10

On the other hand, analysis of the farm location indicates that production is primarily concentrated in the Central states (Miranda, Aragua, Carabobo, and Distrito Federal). The number of farms in these states is 258. Of this number, 17 have flocks of 50,000 and over, while 73 farms reported flocks ranging from 20,001 to 50,000 broilers. This means that 90 of the 128 farms having flocks of 20,001 and over are located in the Central states of the country. The other zones with a somewhat high concentration are Zulia, in the West, and Anzoategui, in the East.

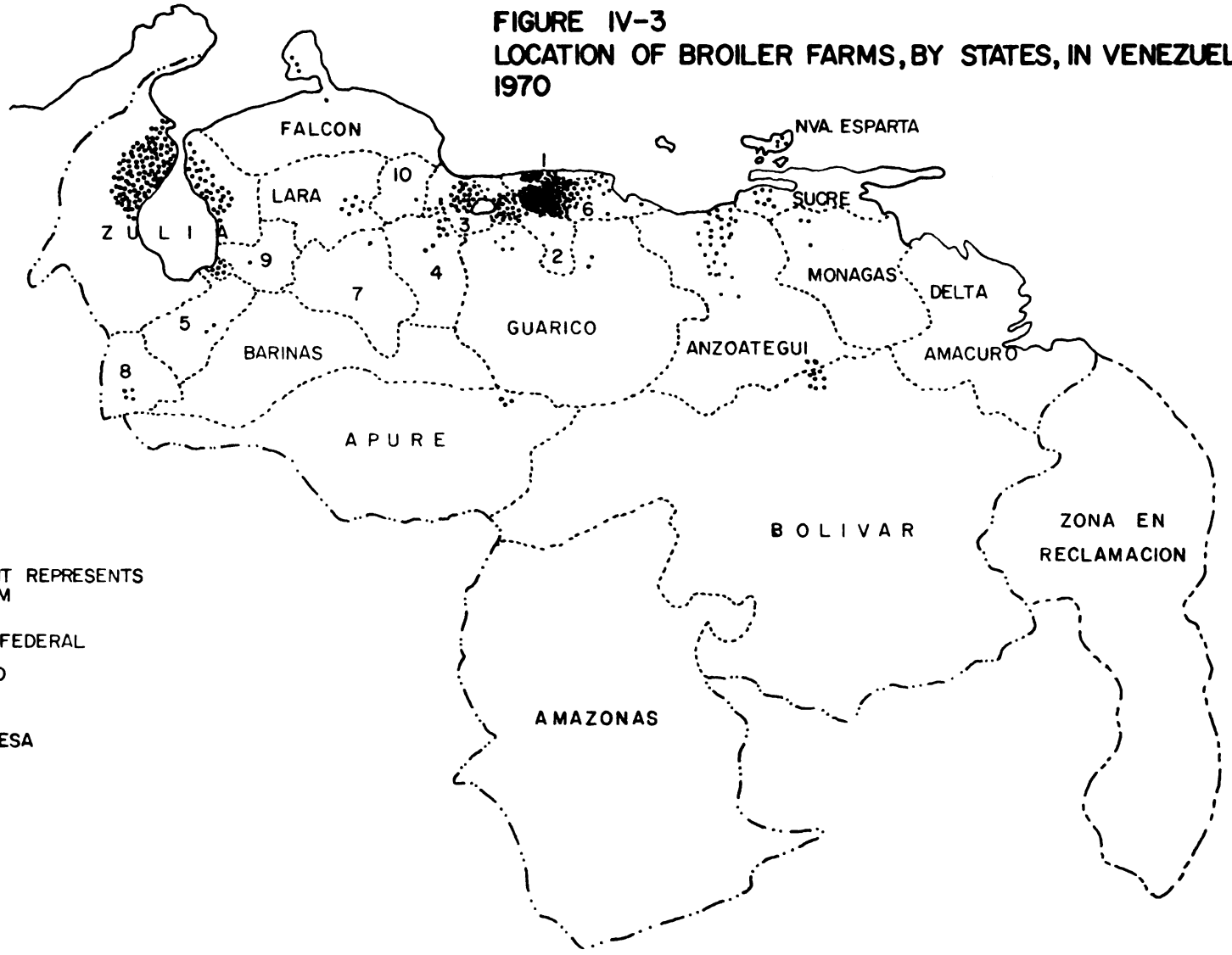
Location of broiler farms in Venezuela is illustrated in Figure IV-3. As can be noted, the zones of high production density coincide with the zones where feed mills, hatching-egg supply flocks, and hatcheries are concentrated.

Further analysis of Table IV-1 seems to indicate a size gap between the so-called familial farms and farms of broiler enterprises. In the case of the familial farms the growing of broilers is frequently a part-time operation and therefore flock size is relatively small.

Output

In 1950, 1.5 million broilers were raised in Venezuela. By 1961, production increased to 26.7 million birds and by 1970, to 58.9 million birds. A rapid rate of growth occurred during the fifties and early sixties. In recent years, the absolute number of broiler produced has increased,

FIGURE IV-3
LOCATION OF BROILER FARMS, BY STATES, IN VENEZUELA.
1970



but the rate of growth has shown an unstable performance. This means that the rate of growth has been fluctuating in such a way that it either increases or decreases from one year to another. This instability in the rate of growth trend is mainly due to the effects of frequent price variations on production. Table IV-2 is presented to illustrate the evolution of broiler production in Venezuela.

Production Practices

Two production methods are practiced in Venezuela. The first is known as the weekly method, which consists of growing lots of different ages so that growers can have broilers ready to market each week. This method is primarily practiced by those growers who operate their own small processing plants. The second production method is the well-known all in-all out practice. The need for reducing costs and increasing efficiency has lately favored the latter, but the former production method is still widely practiced.

The broiler growing period in Venezuela is usually nine weeks. The live-weight at the end of this period is somewhere around 3.5 pounds. When a lot is marketed, two weeks are frequently allowed for housing cleaning up and disinfecting. However, some other factors usually affect this decision. The main reasons either to shorten or lengthen this two-week period are price and price

TABLE IV-2

BROILER PRODUCTION AND PRODUCTION RATE OF GROWTH

IN VENEZUELA

1961 - 1970

Year	Production Millions of Broilers	Rate of Growth Percent
1961	26.7	
		7.5
1962	28.7	
		11.5
1963	32.0	
		24.7
1964	39.9	
		0.3[a]
1965	40.0	
		7.0
1966	42.8	
		11.4
1967	47.7	
		5.5
1968	50.3	
		5.8
1969	53.2	
		10.5
1970	58.8	

[a] This is a particular case due to an increase in feed prices

Source: Venezuela, Ministerio de Agricultura y Cria, Anuario Estadistico Agropecuario 1970.

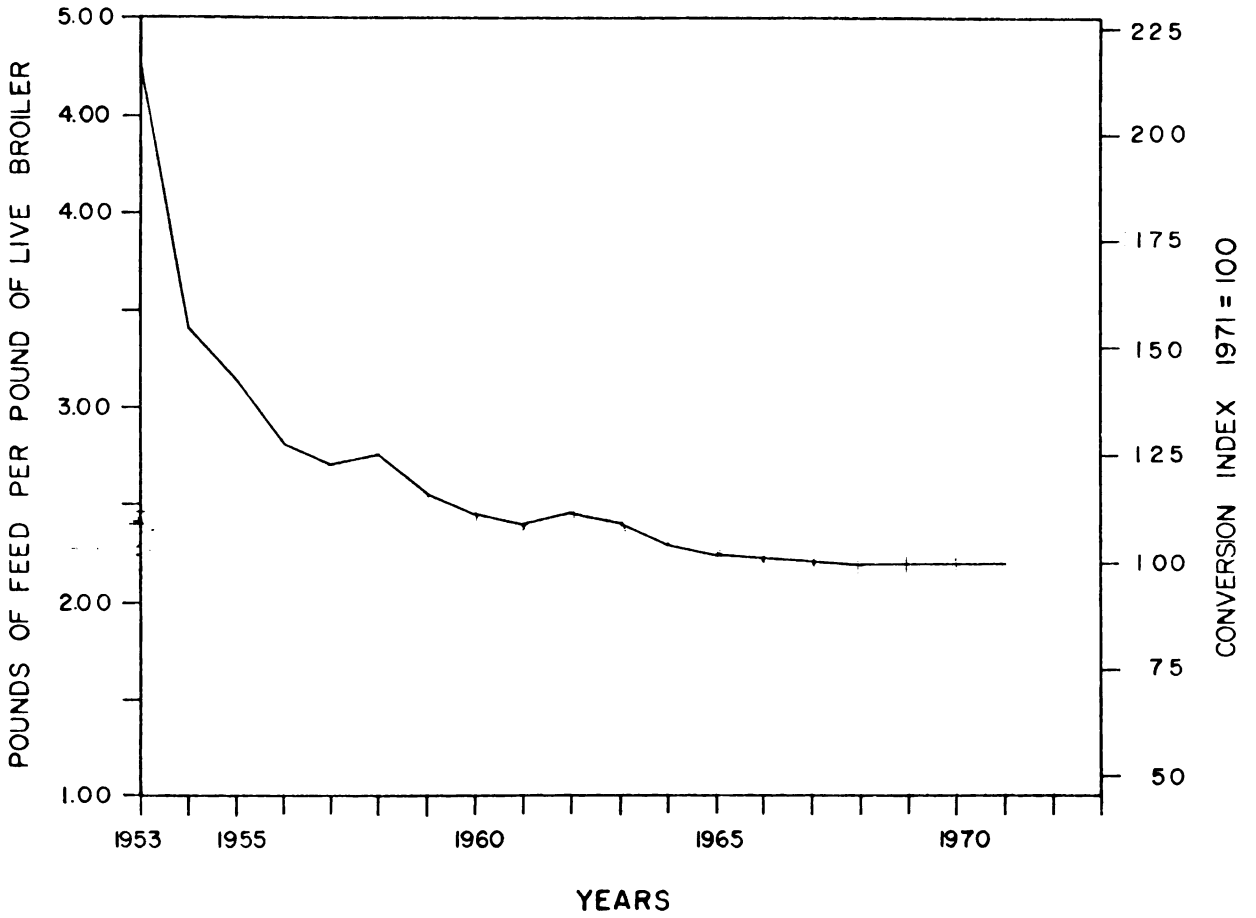
expectation. For example, growers usually react to high prices by shortening the period allowed before placing chicks and, if possible, increasing the number of chicks placed. On the other hand, low price often bring on the opposite effect and sometimes also some growers are unwilling to sell their production, and broilers may eventually be reared to an age of 11 or 12 weeks. This complex set of action and reaction thus far has been the main factor leading toward the unstable performance that today characterizes the Venezuelan broiler industry.

Labor efficiency and feed conversion vary in Venezuela according to flock size. In general, efficient use of labor has been achieved in the larger farms through the use of labor-saving equipment. Management practices are also better in large farms. As a result of these economies of scale, large farms show lower production costs than do small flock growers.

Feed conversion in Venezuela has been improved as shown in Figure IV-4. This figure was elaborated from data provided by a feed mill company, and it refers mainly to an average obtained in a sample farm rather than an average of the overall production. Therefore, the overall average should be somewhat higher than that shown in Figure IV-4. According to a study made in 1966[6], small farms showed an

[6]Juan Mindiola, "La Estructura de la Produccion Nacional de Pollos de Engorde" Caracas, Ministerio de Agricultura y Cria, 1966.

FIGURE IV-4
BROILER FEED CONVERSION IN VENEZUELA
1953 - 1971



SOURCE: PRIVATE SECTOR (Unpublished Data)

average feed conversion rate of 2.54. However, recent information given by private sectors indicates that conversion in large farms ranges from 2.18 to 2.22 and it fluctuates between 2.26 to 2.28 in small farms. The author's own feeling is that there is a downward bias in these estimates, at least in the information concerning small farms, and that real average conversion could well be nearly 2.40 pounds of feed per pound of live broiler.

The annual number of lots reared by growers varies among areas. Unpublished data compiled by private sectors indicate that in the Central and West regions an average of 4.2 broiler lots is raised by growers, while this number goes up to 5.0 lots in the East region. These differences will be discussed later, in the analysis of marketing practices.

Broiler Sale Practices

A long time ago, a substantial part of broiler production was marketed alive; this practice has been changing and today broilers are mainly marketed in a ready-to-cook plus form.

According to sale practices, growers can be classified in three categories: those who have their production under contract, those who process their own production, and those who are independent and may deal with different processing plants. The first sell their broilers according to contract

specifications; the second operate small, integrated firms, in which sales of live-broilers do not really occur; and the third usually have some kind of verbal agreement with a processing plant, but eventually they could deal with other processors and usually do.

Broilers are usually bought by agents of processors at the farm, but on the basis of pounds of live-broilers weighed at the plant. Transportation costs are seldom paid by growers, but when they are responsible for transporting their own broilers, a price higher than the market price is guaranteed.

Production Costs

Although much research has been conducted in Venezuela to investigate different production cost levels, the results have not been published because they are considered by the firms as confidential information. Nevertheless, it is known that costs vary among growers, being lower for large farms.

Table IV-3 shows estimated costs of rearing broilers in Venezuela from 1965 to 1971. These costs were estimated by the author, based on feed conversion, feed and chick prices, and further information obtained from the private sector. The feed conversion data taken into consideration were those shown in Figure IV-4. Therefore, the figures calculated are closely related to production costs in large farms. It is

TABLE IV-3

ESTIMATED COSTS OF REARING BROILERS IN VENEZUELA

Year	Chick Bs/Broiler	Feed Bs/Broiler	Medicines Bs/Broiler	Litter, Fuel, Water, etc. Bs/Broiler	Sub-Total[a] Bs/Broiler	Bs/Kg	¢/lb	TOTAL[b] ¢/lb
1965	0.85	2.29	0.22	0.16	3.52	2.200	22.2	24.3
1966	0.85	2.27	0.22	0.14	3.48	2.175	22.0	24.1
1967	0.85	2.27	0.21	0.13	3.46	2.163	21.8	23.9
1968	0.80	2.25	0.21	0.13	3.39	2.119	21.4	23.5
1969	0.70	2.25	0.21	0.12	3.29	2.056	20.8	22.9
1970	0.70	2.25	0.20	0.13	3.28	2.050	20.7	22.8
1971	0.75	2.41	0.20	0.12	3.48	2.175	22.0	24.1

[a] It does not include costs of labor, depreciation, and interest on working capital.

[b] Using ¢2.1 per pound as an overall figure for the cost mentioned in a/.

Author's estimates based upon feed conversion, feed and chick prices, and further information obtained from the private sector.

also necessary to indicate that costs of labor, depreciation, and interest on working capital included in these estimations were obtained from confidential reports. They have estimated this overall figure at ¢ 2.08 per pound.

Analysis of Table IV-3 indicates that feed and broiler chicks accounted for more than 82 percent of the total production cost in 1971. - feed 63 percent and chicks 19 percent, - while cost of labor, depreciation, and interest on working capital was estimated at only 8.7 percent of the total cost. This is reasonable because of the low labor cost.

Prices Received by Growers and Production Costs

Prices received by growers vary during the year and among regions. Table IV-4 shows annual average prices by states. Although the data are presented in terms of bolivars per kilogram, an estimate of the figures in terms of U.S. cents per pound can easily be obtained by multiplying each figure by 10. Thus, Bs. 2.47 per kilogram is approximately 24.7 U.S. cents per pound.

Analysis of this table shows that annual average prices in Central states are usually lower than prices in other regions. This situation can be explained by the broiler production density of the region, flock sizes, lower costs, and competition among suppliers. On the other hand, it is known that prices fluctuate widely during the year. Thus,

TABLE IV-4

LIVE BROILERS. PRICE RECEIVED BY GROWERS, BY STATES, IN VENEZUELA

1967 - 1970
(Bs/Kg.)

	1967	1968	1969	1970
Distrito Federal[a/]	2.47	2.48	2.67	1.89
Anzoategui	3.29	3.45	3.19	4.62
Apure	4.43	4.05	3.86	4.01
Aragua[a/]	3.06	2.64	2.59	2.16
Barinas	3.11	3.48	3.57	3.36
Bolivar	3.25	3.21	3.39	3.55
Carabobo[a/]	2.80	2.63	2.56	2.05
Cojedes	3.58	3.16	3.07	3.00
Falcon	2.82	2.90	3.02	3.12
Guarico	4.04	3.98	4.10	4.43
Lara	2.85	2.68	2.53	2.74
Merida	3.32	3.31	2.43	3.50
Miranda[a/]	2.46	2.44	2.63	2.32
Monagas	3.50	3.76	3.60	n.a
Portuguesa	3.64	3.56	3.73	3.08
Sucre	3.58	3.22	2.97	n.a
Tachira	3.46	3.26	3.26	3.25
Trujillo	2.81	2.73	2.92	2.50
Yaracuy	2.63	2.77	2.70	3.77
Zulia	2.74	2.66	2.67	2.58
National Average	2.81	2.74	2.79	2.71

[a/] Central States

n.a = not available

Source: Venezuela, Ministerio de Agricultura y Cria, Anuario Estadistico Agropecuario 1970. p. 499

growers' income depends upon the particular prices for the moment at which the sale of broilers takes place.

Table IV-5 is used to show some figures relating to the margins between production costs and prices per pound of live-broiler in Venezuela. It has been elaborated by taking into consideration national average prices and data on cost presented in Table IV-3, but using an average feed conversion value of 2.4. Of course, Table IV-5 should be used very carefully because it has been elaborated on the basis of many assumptions.

TABLE IV-5

MARGINS BETWEEN PRODUCTION COSTS AND PRICES PER POUND OF LIVE-BROILER IN VENEZUELA

1965 - 1970
Value in ¢/lb

Year	Price[a/]	Cost[b/]	Margin
1965	29.7	25.3	4.4
1966	29.7	25.2	4.5
1967	28.4	25.1	3.3
1968	27.7	24.8	2.9
1969	28.2	24.1	4.1
1970	27.4	24.1	3.3

a/ Annual average according to official publications.

b/ Calculated from Table IV-3, but using a feed conversion value of 2.4.

Elaborated From: Venezuela, Ministerio de Agricultura y Cria, Anuario Estadistico Agropecuario, Selected Issues, and information obtained from private sources.

Table IV-5 illustrates that margins between broiler production costs and prices have a general decreasing trend. In 1969, average prices went up, while cost was reduced as a consequence of a decrease in chick prices. As a result, margins increased in relation to other years. However, since then a decreasing trend has continued.

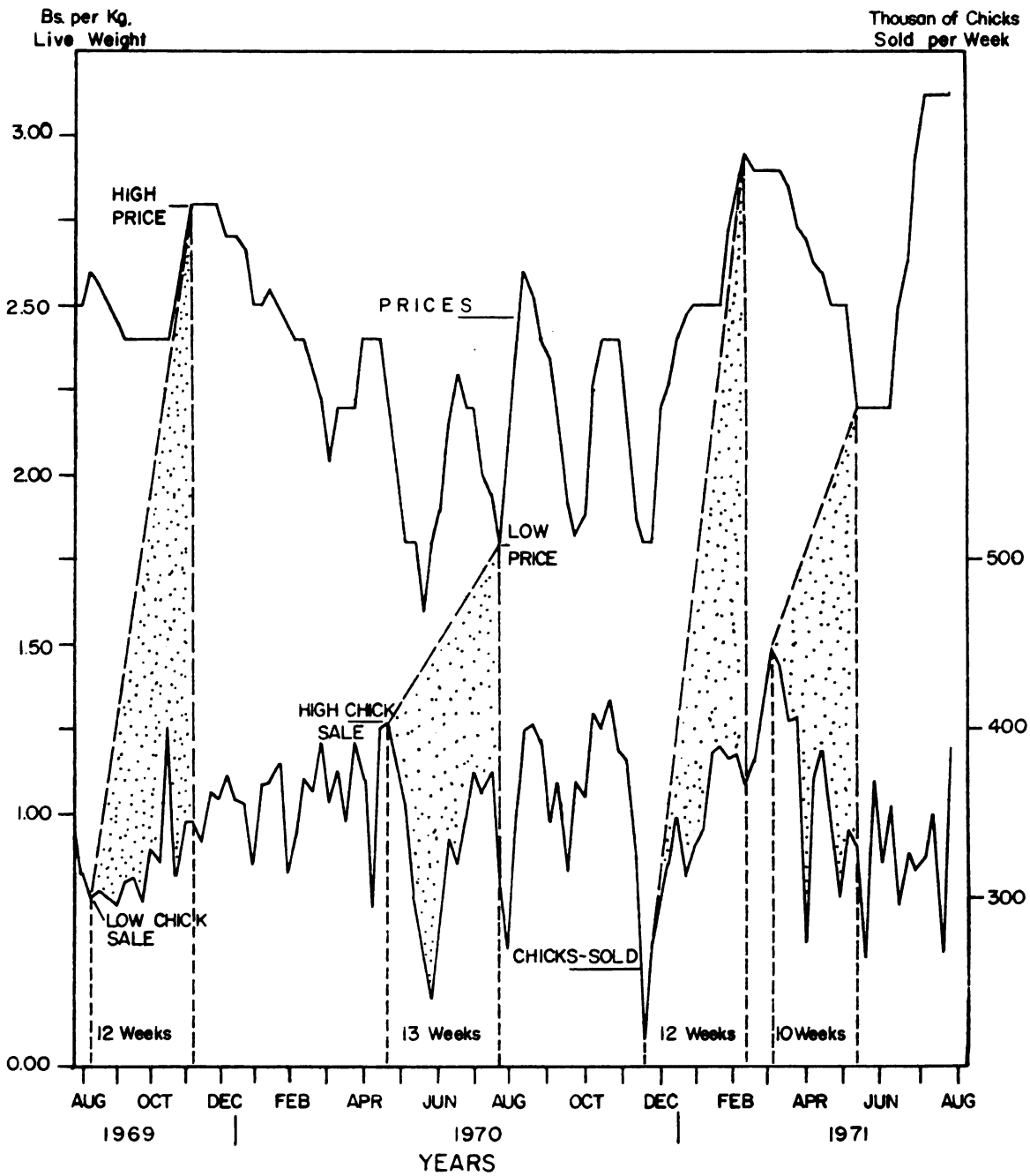
In general, hen meat commands a higher price than broiler meat. This price difference has been maintained throughout the years, mainly because of consumer preferences for this kind of poultry meat to create a popular chunky soup called "sancocho" and also because of relatively low hen supply. Finally, it should be mentioned that at the present time there is a national poultry fund created by the Venezuelan National Poultry Federation, and other institutions[7] which guarantees to growers a minimum price of 25.3 U.S. cents per pound of live-broiler. As can be observed, this price is higher than the cost calculated for 1970 in Table IV-5. This means that practically all growers can make profits on each lot; thus, inefficient operations are being fostered or maintained. A further discussion of this topic is presented in Chapter VII.

Some Facts about Prices and Production

Figure IV-5 illustrates the relationship between broiler prices and production. The figure was elaborated by

[7]See Chapter VII, p. 149.

FIGURE IV-5
BROILER PRICES RECEIVED BY GROWERS AND NUMBER OF CHICKS SOLD BY A SAMPLE HATCHERY IN THE CENTRAL REGION OF VENEZUELA



SOURCE: PRIVATE SECTOR (Unpublished Data)

plotting the weekly data for broiler prices received by growers and number of chicks sold by a sample hatchery in the Central region during the period from August 1969 to August 1971.

Analysis of this figure reveals that high prices usually occurred 10 to 12 weeks after a relatively low rate of placements. Likewise, low prices took place 10 to 12 weeks after a relatively high rate of placement. This means that chick placements have an effect upon broiler prices 10 to 12 weeks later; thus, period of time coincides with the growing period plus the time which elapses between marketing a broiler flock and starting to grow another. On the other hand, it is also possible to observe that high prices frequently fostered a high rate of placements, while low prices had the opposite effect. As a result, the rate of chick placements changed according to the rate of broiler prices, so that an increasing rate of placements usually followed rising broiler prices and a decreasing rate of placements followed declining broiler prices. An exception to that trend was observed in 1971 from May to August; nevertheless that exception was due to a New Castle epidemic.

Comparison of the results of the analysis of this figure with those obtained from Figure IV-1 indicates that the Venezuelan broiler industry shows a price-production relationship similar to that which the United States broiler industry had during the early fifties. This is mainly due to

lack of coordination between the production stage and all other stages of the broiler industry.

Long-Run Production Costs and Implications

Future output will be produced with average costs at least as low as the best present knowledge indicates is likely to be achieved. Since feed conversion rates below 2.0 have already been achieved in the United States, it is reasonable to expect a conversion rate of at least 2.0 in the future in Venezuela.

It seems likely that the scale of operation and management quality are two areas which will experience changes contributing to reduced costs. So far, broiler production in Venezuela has been characterized by a small scale of operation, lack of technical knowledge, poor management, and growers' lack of financial resources. This situation will change in the future, mainly because of the need for coordination between stages which will make growers follow programs established and supervised by the marketing channel captain - the integrator.

On the other hand, a reduction of margins between broiler production costs and prices will also occur in spite of the actual practice of the National Poultry Fund of guaranteeing to growers a minimum price per kilogram of live-broiler. The reason is very simple: such a practice stimulates a disorderly expansion of the industry and reduces the

incentives to improve efficiency. Therefore, it seems likely that a change in this policy will occur, and the price-cost squeeze will induce the least efficient producers to adjust their production costs or leave the business. Furthermore, during such a period, short-run prices may fluctuate widely and at times go considerably below the long-run cost projections before some of the marginal producers are eliminated. This expectation is not new. It has already been noted in the Central market, in which price has at times been as low as 16.2 cents per pound (See Figure IV-5).

Final Considerations

This chapter contained a discussion of the effects of new technology on the production stage of the broiler industry in developed countries and Venezuela. As indicated throughout the discussion:

1. Broiler production in Venezuela shows an uneven growth and development as far as farm size and use of available technology is concerned.

2. The Venezuelan broiler industry shows a price-production relationship similar to that which the United States broiler industry had during the early fifties. That is, chick placements have an effect upon broiler prices 10 to 12 weeks later, and prices influence later placements.

3. Price decline and scale economies are expected to lead this stage to a greater concentration.

4. Since many growers operate their own processing plants, the aforementioned increase in concentration will also affect the processing structure.

The structure and practices of the processing stage is discussed next in Chapter V.

CHAPTER V

FACTORS AFFECTING SUPPLY: POULTRY PROCESSING

INTRODUCTION

The development of mass production methods in poultry processing has been possible due to social innovations that occurred prior to World War II. Home refrigerators, supermarket retailing, ice-pack shipping, and rapid truck transportation all have combined to (1) make possible the processing of broilers in the production areas, rural zones, with low cost labor and (2) reduce the weight loss in transporting live-birds.

Decreasing prices and increasing competition have made processors intensify their interest in more efficient processing methods. This has led toward greater concentration of processing into fewer plants, mainly because of enhancement of efficiency through fuller use of plant capacity and substantial economies of scale.

Poultry processing is among the most important factors affecting the broiler industry. Processors share a great deal of responsibility for the form and quality of the product which reaches consumers. Therefore, it is important for them to be aware of consumers' needs and desires in order to satisfy consumer through processing innovations.

Actually, processing is the stage of the Venezuelan broiler industry which shows the lowest degree of development. Therefore, analysis of this stage and its comparison with processing practices in developed countries will be worthwhile in evaluating industry performance and providing a basis for a proposal for improving market performance and coordination in the Venezuelan broiler industry.

Poultry Processing in Developed Countries

Analysis of the evolution of poultry processing in developed countries shows that:

1. There has been a tendency to change processing plant locations from urban to rural areas; in other words, to change plant locations from centers of consumption to production centers. This has allowed a reduction in labor and transportation costs, as well as in live-broiler weight loss.

2. There has been a long-run trend toward concentration of broiler processing in fewer plants and firms. Greater firm concentration is expected in the future as a result of further acquisitions and mergers.

3. Initially, broilers were marketed live and later in the New York dressed form (only blood and feathers removed). At present, broilers reach consumers either in ready-to-cook form or as part of further-processed products.

Nevertheless, the largest part of broiler production is processed as ready-to-cook birds and sold cut up or whole. Actually, the latter form accounts for the largest proportion of production.

4. Substantial economies of scale have been found in assembling and processing broilers. The optimum plant size is different for each situation, and depends upon the combined costs of assembling, processing, and distributing.

5. Fuller use of capacity has been necessary to minimize overhead costs. Therefore, processors have made some kind of arrangement with growers or have gone into growing activities themselves - integration, to insure a somewhat regular supply the year around.

6. Government inspection is normally performed in processing plants. In the United States, federal health inspection for poultry entering into interstate commerce is compulsory. As a result, some broilers are condemned. The main causes of condemnation are diseases or infections such as leukosis, septicemia, and air sacculitis, and those related to handling and processing of broilers such as bruises, contamination, and overscalding.

7. Processors give special attention to plant sanitation and quality control programs -- the former because government inspectors can shut down the plant if sanitary requirements are not met; and the latter because such programs reduce spoilage losses during storing and marketing

and provide a quality product which appeals to consumers.

8. Processors' selling prices have shown a downward trend due to the decline in live-broiler prices[1] and the decrease in processing costs resulting from larger and more efficient plants. The latter is also the most important factor in narrowing processors' marketing margins.

9. Finally, today's processing plants are active elements of the total marketing strategy because they have created an extremely perishable product which must be disposed of within a short time. As stated in earlier chapters, vertical integration has reduced the number of decision makers and shifted decision centers from farms to integrators. The main objective of integrators has been to increase their overall business and, at the same time, maintain a balanced operation of hatchery, feed mills, grow-out facilities, and processing plants; therefore, decision centers have been located as close as possible to consumers - the processing plants. They provide the feedback that gives the guidelines for the establishment or modification of production planning and marketing strategies.

[1]Actually, the open market price for live-broilers is practically non-existent and in May 1971, for example, the USDA stopped reporting live-broiler prices in the United States.

Poultry Processing in Venezuela

The Venezuelan broiler industry is characterized by the presence of many growers who have extended their activities through processing and marketing. Since they process their own production, their processing plants can be described as very small facilities in which lack of adequate equipment and technical knowledge makes it difficult to obtain a fair final product. Although there seems to be a trend or a force leading toward concentration in fewer and larger processing plants, the impact of this leading force has not yet been significant.

Number, Size, and Location of Processing Plants

Table V-1 was elaborated from data provided by confidential sources in Venezuela. It illustrates the number, size distribution, and location of poultry processing plants by states in Venezuela in October of 1971. Analysis of this table shows that only eight of the 103 processing plants in Venezuela have capacity enough to process more than 1,000 broilers per hour. Among the others, 65 have been reported to have a capacity which ranges between 10 and 200 birds per hour. Of this number, 24 were indicated to have a capacity ranging between 10 and 50 birds per hour. Comparison between the total number of broiler farms reported by the Ministry of Agriculture and Animal Husbandry and the number

TABLE V-1

NUMBER, SIZE, AND LOCATION OF POULTRY PROCESSING PLANTS, BY STATES, IN VENEZUELA

1971

	SIZE BY CAPACITY IN BIRDS PER HOUR					
	10-200	201-400	401-1000	1001-2000	more than 2001	TOTAL
Distrito Federal	3	-	-	2	-	5
Anzoategui	5	2	-	1	-	8
Aragua	-	-	1	-	1	2
Bolivar	2	1	-	-	-	3
Carabobo	9	2	1	-	-	12
Cojedes	4	-	-	-	-	4
Falcon	5	1	-	-	-	6
Guarico	8	-	-	-	-	8
Lara	1	2	4	-	-	7
Merida	2	1	-	-	-	3
Miranda	4	3	2	3	-	12
Nueva Esparta	3	-	-	-	-	3
Portuguesa	-	1	-	-	-	1
Tachira	5	-	-	-	-	5
Trujillo	6	-	-	-	-	6
Yaracuy	1	1	-	-	-	2
Zulia	8	4	3	-	1	16
Venezuela	65	18	11	6	2	103

Source: Confidential.

of processing plants reported by this confidential source establishes the fact that there are as few as five farms for every processing plant. These figures confirm the statement that many growers process their own production, and illustrates the critical situation with which the Venezuelan broiler industry is confronted in this stage.

Figure V-1 and V-2 illustrates the location of processing plants in Venezuela. Analysis of Figure V-2 reveals that six of the eight biggest plants are located in Central states, while the other two are in Zulia in the East, and Anzoategui in the West. This indicates that broiler processing, as well as production, is concentrated in these areas.

Average Capacity and Rate of Use of Processing Plants

Table V-2 is presented to show the average capacity and rate of use of processing plants by states in Venezuela in October of 1971. This table was also extended from information provided by confidential sources. The information comprises data on location, capacity, and the average weekly number of broilers processed in each processing plant. Analysis of this table reveals that:

1. The average plant capacity in Venezuela is 351 birds per hour, and the overall rate of utilization of plant capacity in October was as low as 56.4 percent.

2. Aragua, Miranda, and Distrito Federal - all Central

FIGURA V-I
LOCATION OF BROILER PROCESSING PLANTS, BY STATES, IN VENEZUELA. OCTOBER 1971

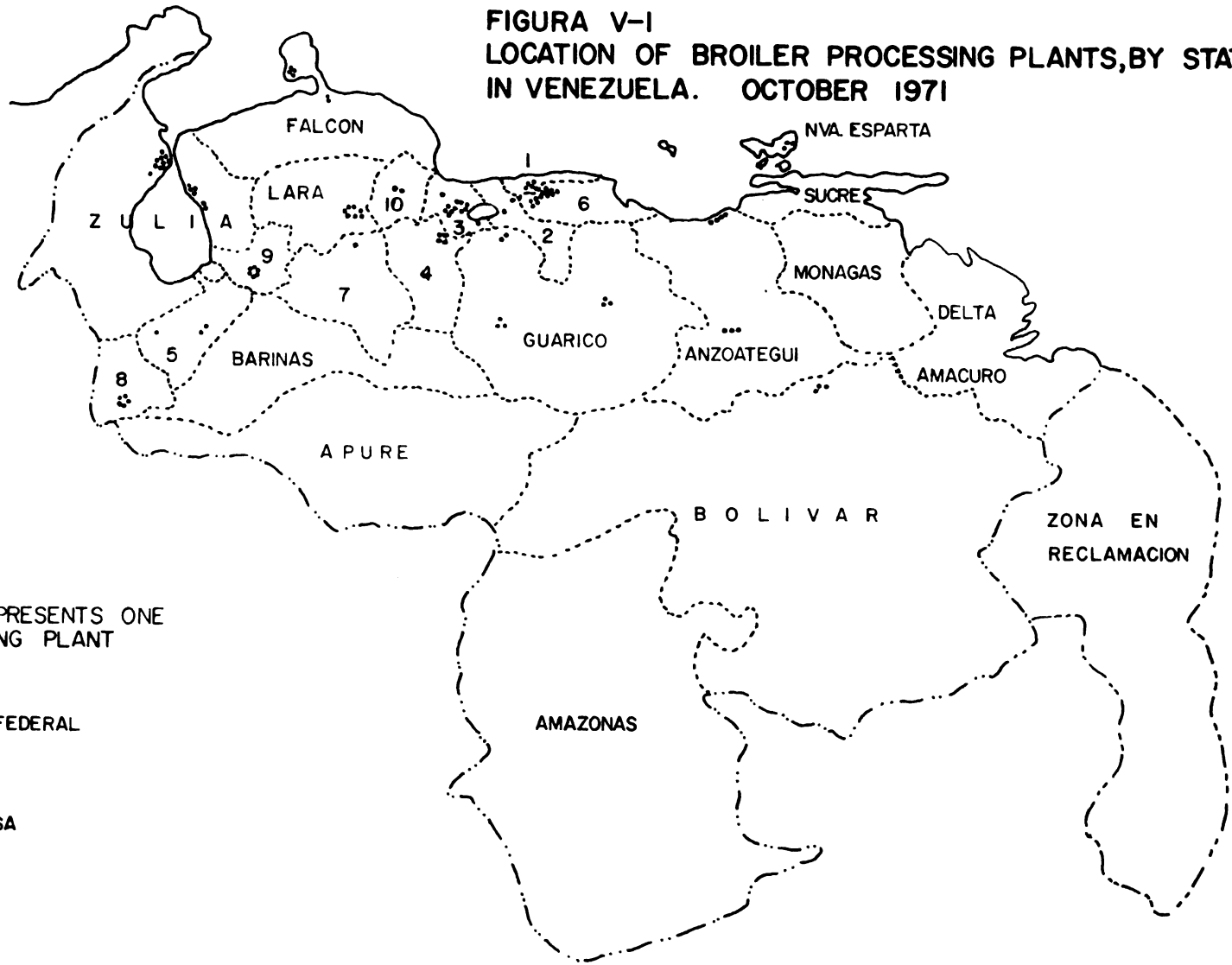


FIGURE V-2
LOCATION OF BROILER PROCESSING PLANTS LARGER THAN 400 BIRDS/HOUR, BY STATE, IN VENEZUELA. 1970

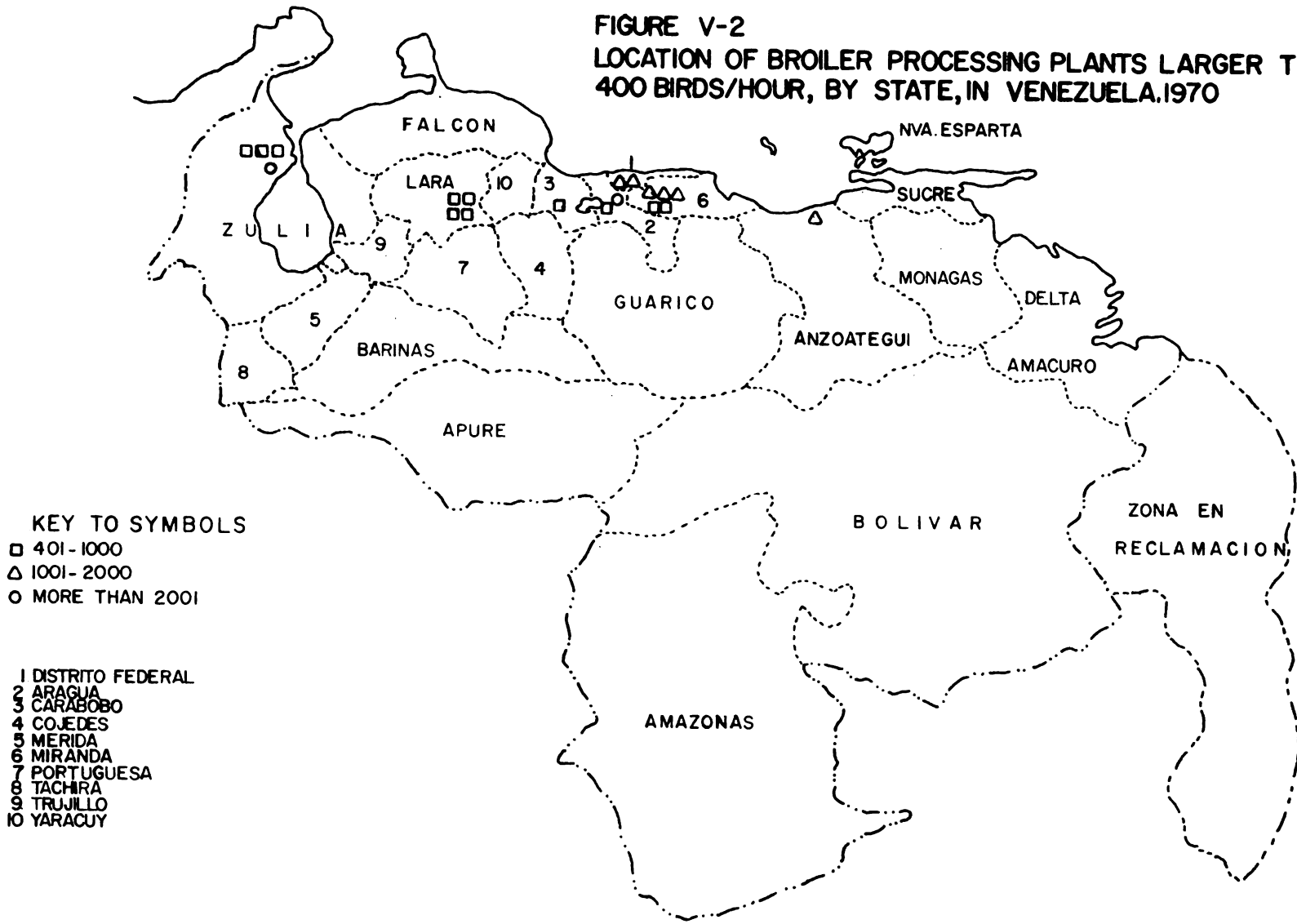


TABLE V-2

AVERAGE CAPACITY AND RATE OF USE OF PROCESSING PLANTS, BY STATES, IN VENEZUELA
OCTOBER 1971

	Number	Average Capacity Birds/Hour	Weekly Capacity[a] Birds/Week	Rate of Use Birds/Week	Rate of Use Percent
Distrito Federal	5	670	160,800	122,400	76.1
Anzoategui	8	250	96,000	94,450	98.4
Aragua	2	2,000	192,000	112,000	58.3
Bolivar	3	167	24,000	22,700	94.6
Carabobo	12	201	115,680	39,430	34.1
Cojedes	4	120	23,040	7,200	31.3
Falcon	6	146	42,240	19,800	46.9
Guarico	8	43	16,320	8,300	50.9
Lara	7	650	218,400	30,500	14.0
Merida	3	167	24,000	4,800	20.0
Miranda	12	692	398,400	321,500	80.7
Nueva Esparta	3	10	1,440	1,100	76.4
Portuguesa	1	400	19,200	12,000	62.5
Tachira	5	110	26,400	9,000	34.1
Trujillo	6	83	24,000	7,200	30.0
Yaracuy	2	150	14,400	4,000	27.8
Zulia	16	438	336,000	159,800	47.6
Venezuela	103	351	1,732,320	976,180	56.4

[a] Based on 48 hours per week

Source: Confidential.

states - have the largest average plant capacity.

3. The five leading states in number of birds processed by week were Aragua, Miranda, and Distrito Federal in the Central region, Zulia in the West, and Anzoategui in the East.

4. Two Western states, Anzoategui and Bolivar, showed an impressive capacity rate of use of 98.4 and 94.6 percent, respectively. Nevertheless, analysis of individual data revealed that the rate of use of the largest plant in each state was greater than 100 percent. This means that these plants had to operate extra hours in order to accomplish their jobs. This situation may be explained somewhat by the regional supply shortages that often occur in this zone.

5. The rate of use of the largest plant in Zulia was reported to be 56 percent, while the average for the six largest Central plants was about 70 percent.

6. The eight largest plants accounted for 56.6 percent of the total volume of broilers processed in the country in October of 1971, while the 12 and 20 largest plants accounted for 67.4 and 79.2 percent, respectively. This means that the remaining 83 plants were responsible for processing only 20.8 percent of the total volume of broilers going to the market in a ready-to-cook plus form.

Thus far, all comments have been based on the data presented, which do not include information about extra hours worked. As far as the author knows, two factors

affect processing scheduling and rate of utilization of plant capacity: first, the demand for broiler meat, which reaches its peak during week-ends; and second, the short shelf life of the product. This means that in order to meet demand and to supply a "wholesome" product, processors have to shorten the time lapse between slaughter and consumption. Therefore, processing volume during early part of the week is low relative to capacity. During the second half of the week, the processing plants frequently have to work extra time to handle their volume. So, no matter what the plant capacity or rate of utilization is, almost all poultry processing plants in Venezuela frequently need to work extra time. The foregoing considerations seem to indicate that the rate of use of average capacity is lower than the figures shown in Table V-2.

Processors' Practices

Practices followed by processors in Venezuela depend upon the plant size, the degree of integration, and the region in which they operate. Analysis of these practices is performed in this study by classifying them in three broad areas: (1) buying and assembling, (2) processing, and (3) sale and delivery.

Buying and Assembling Practices. All small and several medium-sized processors usually process their own production

in a plant located either within or near the farm. In general, these people operate their farms under the weekly production method so that they can have broilers available for processing each week. The assembling is most often performed by the plant workers, and broilers are delivered to the plant in small trucks, which are usually owned by the grower-processor.

Some medium-sized and large processors operate in a somewhat different way. Most of them receive broilers produced under contract, by themselves, and directly from independent growers. When broilers are grown under contract, there is usually a three-way agreement among a feed mill, a processing plant, and a grower. The buying price of broilers under contract is usually determined by the market price and the conditions of the agreement. Lots grown under contract or by processors themselves are supervised by a fieldman, who advises the plant of their progress. If broilers are grown by an independent grower, they are inspected at the farm prior to agreement on price. Actually, the fieldman for the feed mill or processing plant informs the processors and growers so that they may reach an agreement regarding sale details. Practices by which broilers are assembled and delivered to the plant vary among farms and regions. In Zulia most broilers are assembled and delivered to the plant by growers, while in the Central region processors are responsible for performing these operations.

To accomplish that, the Central processors usually hire truckers at a specified amount per pound to pick up and deliver the birds to the plant, according to a schedule set up by the plant management. Most processing plants operate with a plan of loading broilers at night and processing during the day. Catching crews are usually constituted by inexperienced people who are hired by the truckers. Therefore, there are times at which an excessive number of broilers are bruised while being caught and loaded in crates. Practices reported by one of the biggest processing plants indicate a very low rate of truck utilization and poor crew efficiency. This is evidenced by the relatively long time they are on the road. Application of simple industrial engineering techniques should allow such plants to increase assembling efficiency and reduce transportation costs.

Processing Practices. A detailed analysis of poultry processing methods and practices in Venezuela, as well as a proposal for improving the product quality, is presented in Appendix A. Therefore, discussion of processing practices is somewhat simplified throughout this chapter.

In general, absence of governmental inspection and lack of technological knowledge and financial resources are the main factors underlying the irregular control of broiler holding temperatures and poor handling and sanitation practices followed by processors in Venezuela. As a result, the product has a very short shelf life. It could be said

that at times the broilers do not last 48 hours before being unfit for human consumption. Therefore, this is one of the problems to which a solution is urgently required, because of the harmful effects on consumers' attitudes toward the product.

Most broilers in Venezuela are processed in ready-to-cook plus form. As stated earlier, the ready-to-cook plus form is somewhat similar to the well-known ready-to-cook form, but feet, and part of the head are included. Feet are presented folded and inserted in the body cavity. This particular form of presentation gives rise to further operations, thereby increasing product handling and processing costs per unit.

Another interesting characteristic of processing practices is the local barriers to marketing ready-to-cook plus broilers, which exist from one region to another. The difficulty lies in slight processing differences which give the product characteristics which appeal to local consumers. For example, in Zulia broilers are hit on the breast to break the bone and allow a more regular, ball-like package conformation; in Lara, broilers are plunged into warm water after defeathering them in order to increase the yellowish pigmentation of the skin; and so on. The fact that broilers are not marketed in a standard form throughout the country hinders the achievement of greater economies of large scale in broiler processing and marketing.

Venezuelan consumers like fresh broilers better than frozen ones. Therefore, processors freeze broilers only during periods of surplus. All broilers are sold as a whole bird, but some retail outlets cut up the broilers.

Sale and Delivery Practices. The largest plants usually have a distribution warehouse in a large city close to them. In general, the size plant, type of outlets serviced, and distance to market influence the plant's policy of handling deliveries. Nevertheless, small deliveries are the most usual because of the food retailing structure and practices. In Venezuela, the largest percentage of meat is sold through small-sized meat and grocery stores. Each of these stores carries a small volume of poultry meat, mainly because of their size and the low capacity of refrigerated storage. This, together with the short shelf life of the product, makes them require an almost daily delivery of the product. To accomplish this task, broiler distribution is usually performed by salesmen, who can be calssified into two different types, according to their employment conditions: (1) contracted salesman, who earns a base salary plus a commission by broiler unit of weight sold (kilogram), and (2) independent salesman, who buys from a wholesaler and sells to consumers or retailers at his own risk; he obtains lower prices from the distribution warehouse than any consumer usually does.

Salesmen usually utilize a small motor-vehicle with a

small insulated but not refrigerated compartment. They use some ice on broilers in order to maintain a low temperature. Nevertheless, this goal is seldom maintained along the route; hence it makes worse the problem of short shelf life, which has already been noted.

Broiler prices not only show day-to-day variation, but there also are price differences among processing plants and between fresh and frozen broilers. The latter are always cheaper than the former, although their processing costs are higher.

Finally, credit policy depends upon the size of both plants and outlets. The existence of many small retailers accounts for a great number of very short-term credits for limited amounts.

Processing Costs

The actual structure and practices of poultry processing in Venezuela make it difficult to indicate a range of costs. So far, no research has been conducted in this area and the figures indicated by processors have to be carefully interpreted because of their poor accounting procedures. However, it is obvious that the largest processing plants are the most affected by production fluctuations because of their overhead costs. Research conducted by the author in 1970 showed that the second largest processing plant was using only about 50 percent of its

capacity; as a result, overhead costs accounted for nearly 40 percent of the total costs. Table V-3 was extended from the research findings, and it illustrates the effects of capacity rate of use on processing costs in the aforementioned plant. Data presented are within a small range of rate of use because of the limited scope of the research.

TABLE V-3

EFFECTS OF CAPACITY RATE OF USE ON PROCESSING COSTS

SAMPLE PLANT - 1970[a/]

Rate of Use Percent	Processing Costs of Ready-to-Cook Plus Broilers ¢/lb
42	5.5
50	4.6
54	4.3
58	4.0
63	3.7

[a/] Only a small range of rate of use was considered because of the scope of the research.

The processing costs shown in this table do not include distribution costs, so they should not be compared with marketing margin data presented in the next section. These costs are not representative of processing costs, either. They are higher than usual because the number of workers employed at that time was almost twice the number required because managerial handling of personnel was frequently inefficient. However, they do illustrate the possibility of

achieving economies through large scale operations and indicate the need for analyzing supply and demand factors before deciding on a particular plant size.

Processing costs in other plants have been reported by processors to range from 2.8 to 3.5 cents per pound. Again, the figures do not include marketing costs and their reliability is questionable because of faulty accounting procedures. Furthermore, there are many plants that ignore their fixed costs, so that their data do not reflect real costs.

Prices Received and Processing Margins

Prices received by processors vary during the year and among regions. In this study, the processing margin per pound of salable broiler was estimated by substracting live-broiler cost per pound of ready-to-cook plus bird from wholesale selling price. The live-broiler cost per pound of ready-to-cook plus bird was based on an 82 percent yield. Table V-4 illustrates the average processing margins in Venezuela from 1965 to 1970. Estimates by regions were not possible because of data inconsistencies.

TABLE V-4

AVERAGE PROCESSING MARGINS IN VENEZUELA

1965-1970

Year	Average selling price per ready-to-cook plus broiler	Average cost per live-broiler	Total[a] live-broiler cost per salable ready-to-cook plus broiler	Margin over live-broiler cost per salable ready-to-cook plus broiler
	¢/lb	¢/lb	¢/lb	¢/lb
1965	41.1	29.7	36.2	4.9
1966	42.1	29.7	36.2	5.9
1967	40.6	28.4	34.6	6.0
1968	40.4	27.7	33.8	6.6
1969	39.5	28.2	34.4	5.1
1970	37.9	27.4	33.4	4.5

[a] Assumes an 82 percent yield.

Source: Venezuela, Ministerio de Agricultura y Cria, Division de Estadistica, Anuario Estadistico Agropecuario, Selected Issues.

As can be observed, processing margins increased from 1965 to 1968; since then a decreasing trend has been shown. The cause of this is the increasing number of broilers processed through large plants, which has allowed an improved efficiency and a continuous decline in selling price.

Final Considerations

Analysis of poultry processing was presented throughout this chapter. According to the data, this stage of the Venezuelan broiler industry shows:

1. An uneven development which allows the existence of many small plants and is responsible for many of the inadequate practices in poultry processing.

2. Local barriers to marketing ready-to-cook plus broiler from one region to another. This, together with production uncertainty, hinders the greater achievements which could be accomplished through economies of scale.

3. Absence of research on the nature of scale effects on processing costs. So far, plant capacity has been like a magic number flowing from decision centers.

4. Lack of technological knowledge, hence deficiency in processing methods, plant sanitation, temperature control, and product quality.

5. A short product shelf life, which affects processing schedules and induces a low capacity rate of utilization.

6. Finally, a product appearance which is affected by processing techniques and, in turn, affects consumer attitudes toward the product. This situation will be explained more fully in the following chapter, which deals with marketing practices.

CHAPTER VI

FACTORS AFFECTING SUPPLY: MARKETING

INTRODUCTION

Marketing can be defined as the performance of all activities involved in the flow of goods and services from the initial point of production until they reach the hands of the ultimate consumer. This means that production and consumption are the two ends of the sequence of marketing activities and, thus, they may be widely separated in space, time, and product form. Refrigerated trucks and improved road systems have arisen to bridge the distance gap between processors and consumers. Time utility is created by retailers and wholesalers, or other kinds of intermediaries, by holding stocks of goods available to be drawn upon by buyers. Finally, marketing channels serve to bridge the product form gap due to discrepancies between the technology of production and the technology of use. The main role of marketing, then, is to bridge the producer-consumer gap, creating utility for both by: (1) "determining and influencing existing and potential demand in the market place," and (2) "activating the supply of goods, services, and ideas that will meet this demand and create the desired

customer market transactions."[1]

Analysis of major marketing channels and practices for the broiler industry in developed countries and Venezuela is presented throughout this chapter.

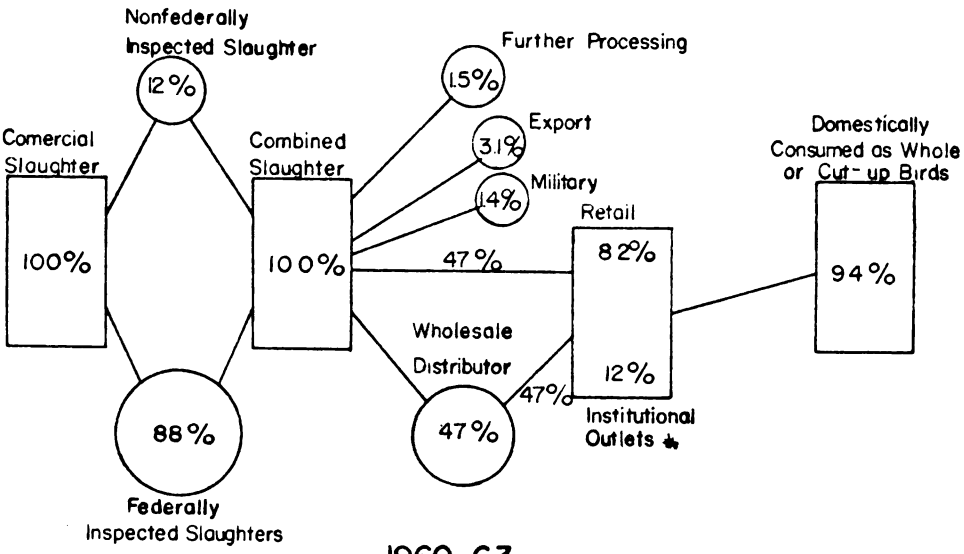
Marketing of Broilers in Developed Countries

Food distribution methods have changed since World War II. The development of the supermarket and improvements in refrigeration, transportation, and communication have allowed a shortening of the distribution cycle of perishable food items, and have fostered mass retailing. This has affected the broiler industry and has brought on substantial changes in broiler marketing channels. In general, marketing channels for ready-to-cook broilers are somewhat similar in the United States and England. Nevertheless, data from the United States are presented in Figure VI-1 to illustrate the changes that have taken place in the major marketing channels for ready-to-cook broilers in the United States from the early 1960's to 1969. Analysis of this figure reveals that:

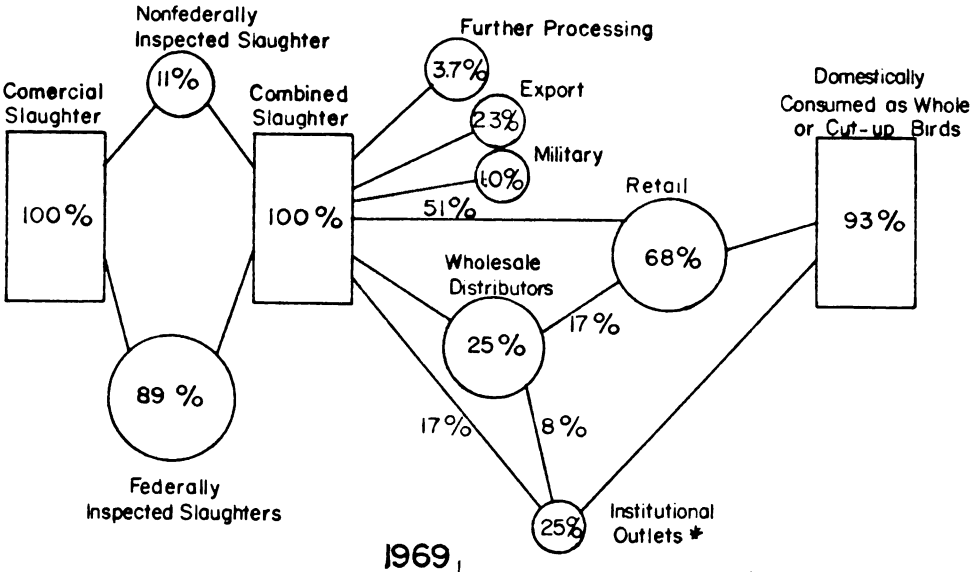
1. Wholesale distributors have been increasingly bypassed, so that the volume of broilers moving directly from

[1]Harry A. Lipson and John R. Darling, "Introduction to Marketing: An Administrative Approach," New York, John Wiley & Sons, Inc. 1971.

FIGURE VI-1
MAJOR MARKETING CHANNELS FOR READY-TO-COOK BROILERS IN U.S.A.



1960-63 1-2



1969 1

* INCLUDES FAST-FOOD OUTLETS, RESTAURANTS, SCHOOLS AND OTHER INSTITUTIONS

SOURCES:

1- ELABORATED FROM: KELLY HARRISON LECTURE NOTES-AVANCED AGRICULTURAL MARKETING-FALL 1971

2- FRED L. SABER & RUTH J. IRVIN: THE CHICKEN BROILER INDUSTRY-STRUCTURE, PRACTICES & COSTS. U.S.D.A., MRR 930, 1971 p. 30-31

processing plants to retail and institutional outlets has increased from 47 percent in the early 60's to 68 percent in 1969.

2. Institutional outlets increased their market share from 12 percent in the early 60's to 25 percent in 1969. The major factor responsible for this relative growth in institutional use has been the development of fast food service stores.[2]

3. Retail outlets increased the volume of broilers they sold; however, the relative volume of broilers handled by retailers declined from 82 percent to 68 percent during the period under consideration. Among the retail outlets, supermarkets sell the largest share of the total volume of broilers.

4. All ready-to-cook broilers used in further processing, export, and military requirements accounted for about 6 percent of commercial broiler output in the early 60's and 7 percent in 1969. This increase was mainly due to an expansion in further processing from 1.5 percent to 3.7 percent, which compensated for the relative decline in export and military requirements.

Changes in food retailing and improvements in broiler processing technology have been the major factors

[2]They include stores like Kentucky Fried Chicken and some other ready-to-eat food outlets.

influencing changes in broiler marketing channels. The most important changes in food retailing that have affected the marketing of broilers are:

1. The development and rapid expansion of the supermarket, which has contributed to a sizable reduction in the number of small neighborhood convenience stores and thereby has affected the food retailing structure.

2. The increase in self-service, which has resulted in the continuation and acceleration of one-stop food stores.

3. The large and rapid turnover of inventory achieved through larger retail stores, which has shortened the distribution cycle of perishable food items, increased the volume of sales and processed food, and increased the size of replacement orders.

4. The change in food sales strategy brought on by supermarkets which make use of promotional measures, frequently based on price concessions, to attract customer into the store. The featuring of fresh chicken as a specially priced item has become standard supermarket procedure.

5. The improvements in methods of packaging, handling, transporting, storing, and distributing food products, which have also affected processing, and

6. The demand of store buyers for perishable items of uniform quality which enhance the image of the store as created in the mind of the customer.

The last two changes have affected processors, who have

improved the quality and appearance of the product in their efforts to meet retail requirements. The latest advance in processing technology has been the development of several chilling systems, which allows for a virtually dry-packed broiler at retail. Right now, the leading processing firms have already changed to one of these systems and it might be expected that, finally, dry-packed broilers will replace the well-known ice-packed form. The principal gains to be achieved through this process are an improved appearance and a longer shelf life of the product.

Finally, the time lapse in the marketing of broilers varies according to marketing practices and market conditions. A recent research report[3] illustrates the time lapse in marketing of a shipment of ice-packed broilers sent from a north Georgia processing plant to a homemaker in Chicago. In that illustration the total time lapse from slaughter to consumption was seven days; however, it can be shortened or lengthened according to marketing conditions. As will be indicated, this period is shorter in Venezuela.

Marketing of Broilers in Venezuela

Although food distribution methods have been widely improved in Venezuela, they are a long way behind those indicated for developed countries, mainly because of the

[3]USDA.

structure of food retailing and the lack of technological knowledge shown by people engaged in food distribution. In this chapter, emphasis is placed on broiler marketing channels and their practices; however, before dealing with these topics, the geographic movements of broilers from areas of production to areas of consumption will be analyzed.

Geographic Movements of Broilers

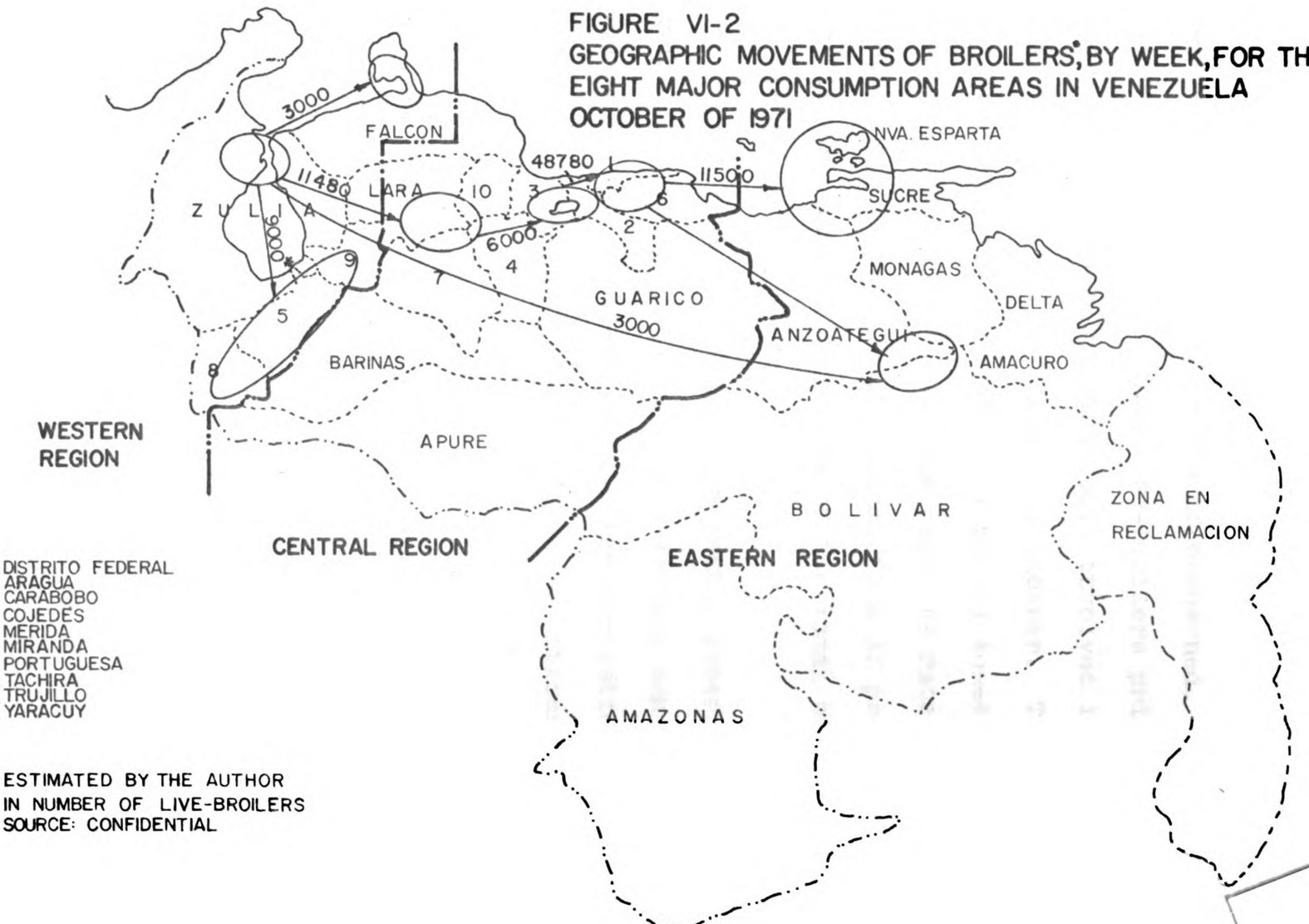
Data on the surplus or deficit status of broiler production in individual states or by regions should serve as a basis for analyzing the pattern of interregional movements of broilers. In the study, confidential information is used to illustrate this section. According to the source of information, the data used here were obtained directly from processors operating in each region. Processors indicated their sources of live-broilers and the number of processed broilers sold in each market by week in October of 1971. The surplus or deficit status of each region was finally calculated by subtracting the number of broilers marketed through the region from the number of broilers it produced. On the other hand, data on consumption per capita per year by the urban population of each region were determined by considering this information for October of 1971 as an average consumption per week per year. Therefore, although these data are presented in this study, they should be analyzed carefully.

Figure VI-2 illustrates the interregional movements of broilers in Venezuela by week. The figure is divided: first, into the three national regions which comprise the so-called Western, Central and Eastern states; and second, into the eight major consumption areas which comprise the largest and the highest income areas of the country. As can be observed in the figure, there is a flow of broilers from West to East. This means that Western states, actually Zulia, show a production surplus which is marketed in Central and Eastern states. On the other hand, geographic movements of broilers also take place within the Western region, from Zulia to northern Falcon and the Andean states (Tachira, Merida, and Trujillo).

The Central region shows an inbound of 11,480 broilers per week flowing from Zulia to the West-Central area of the country, and an outbound of 17,000 birds per week flowing from Miranda and Distrito Federal to the major Western consumption areas. The trade off between number of broilers flowing in and out of the region determines a net weekly surplus of 5,520 broilers. The Central region, as well as the Western, shows internal movements of broilers. These geographic movements are again from West to East.

The Eastern region presents two major consumption areas, both of which show production deficits. This fact determines higher prices and also accounts for the high capacity rate of use shown by processing plants in this region and

FIGURE VI-2
GEOGRAPHIC MOVEMENTS OF BROILERS*, BY WEEK, FOR THE EIGHT MAJOR CONSUMPTION AREAS IN VENEZUELA OCTOBER OF 1971



* ESTIMATED BY THE AUTHOR
• IN NUMBER OF LIVE-BROILERS
SOURCE: CONFIDENTIAL

the greater number of broiler lots grown per year. These three regional markets have been shown to act somewhat independently, as far as prices is concerned. Therefore, the differences among regional live-broilers prices are sometimes a lot higher than the costs involved in transporting live-broilers from one region to another. This stimulates the interregional flow of broilers and sometimes induces regional disequilibrium in the capacity rate of use of processing plants. Interregional flow of processed broilers is more difficult because of the local barriers already mentioned in Chapter V.

Table VI-1 illustrates the weekly interregional movement of broilers, as well as the average annual per capita consumption of broilers on an urban population basis, by region, according to data compiled in October 1971.

TABLE VI-1

WEEKLY INTERREGIONAL MOVEMENT OF BROILERS AND THE AVERAGE ANNUAL CONSUMPTION OF BROILERS PER URBAN INHABITANT, BY REGION, IN VENEZUELA[a/]

From \ To	Broilers per Week				Annual Consumption of broilers per urban inhabitant
	West	Central	East	Balance	Pounds
West	-	11,480	3,000	14,480	13.3
Central	-11,480	-	17,000	5,520	21.7
East	- 3,000	-17,000	-	20,000	17.1

[a/]Based on data compiled for October 1971.

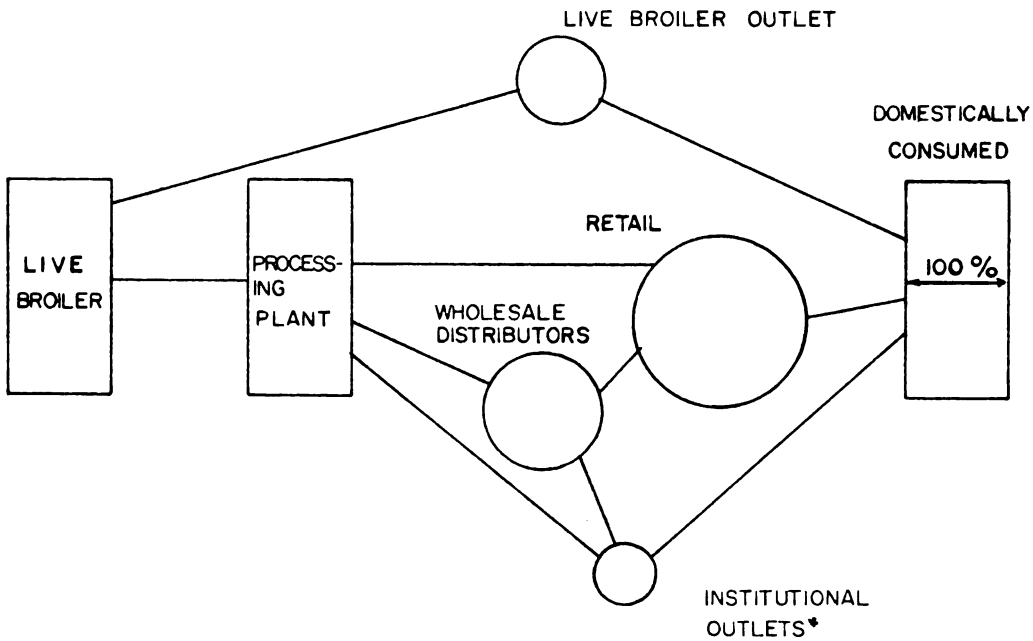
Source: Confidential.

The estimated figures of annual consumption of broilers per urban inhabitant reveal that the Western region of the country has the lowest urban per capita consumption of broiler meat. Nevertheless, this figure actually is somewhat higher than it appears to be because some broilers are still marketed live in this region.

Marketing Channels

The major marketing channels for broilers in Venezuela are illustrated in Figure VI-3. Data on the relative volume of broilers moving through each channel are unknown; thus they are not shown in the figure.

FIGURE VI-3
MAJOR MARKETING CHANNELS FOR BROILERS IN VENEZUELA
1971



* INCLUDES FAST-FOOD OUTLETS RESTAURANTS, SCHOOLS, AND OTHER INSTITUTIONS.

As can be noted, part of the Venezuelan broiler production is still sold live to consumers through different outlets such as municipal markets and farms. It has already been indicated that this is a practice still performed in the Western region. Nevertheless, only a very small percentage of the total volume is marketed in this way. Processed broilers are sold to consumers through retail and institutional outlets, which receive their supply either from processing plants or wholesale distributors. According to plant size and location, processors may have their own distribution warehouses; from which they deliver orders to retailers and institutional users.

Food retailing in Venezuela shows an atomistic structure, in spite of the development and somewhat rapid expansion of the supermarket. Specialty meat stores and neighborhood convenience grocery stores are found in many scattered locations. As a result, these stores usually have small and slow turnovers; thus they need rather frequent deliveries of small replacement orders. Obviously, this affects the performance of the broiler industry and hinders the achievement of economies of scale in delivery.

A significant volume of processed broilers reaches consumers through institutional outlets. Among these outlets,

fast food service stores[4] account for the major volume. Most of these stores specialize in preparing a highly demanded chicken barbecue, well known to Venezuelans as "pollo en brasas." They buy broilers in ready-to-cook form without neck and giblets. Therefore, processors have to make some arrangements for their orders and either process broilers specially for them or prepare broilers already processed as ready-to-cook plus birds.

A recent research conducted in Valencia[5] to investigate marketing of broilers through retail and institutional outlets in the city,[6] showed the existence of 182 retail outlets and 79 institutional outlets other than schools. The relative volume moving through each outlet was recorded as follows:

[4]In Venezuela, they mainly include chicken barbecue stores and a particular kind of ready-to-eat food store called "Areperia." These "Areperias" are popular fast food service stores which serve a sandwich-like prepared using corn-cake rather than bread.

[5]Capital city of Carabobo.

[6]Gustavo Velutini, "Investigacion del Mercado de Pollos Beneficiados en el Distrito Valencia al Nivel de Detallistas," Valencia. Unpublished Research Paper, 1970.

TABLE VI-2

RELATIVE VOLUME OF READY-TO-COOK PLUS BROILERS MOVING THROUGH RETAIL AND INSTITUTIONAL OUTLETS IN VALENCIA, 1970

Retail Outlets	Relative Volume of Broilers Percent
Supermarkets and convenience grocery stores:	56.6
Specialty meat stores	24.2
TOTAL	80.8
Institutional Outlets	
Fast Food Outlets	14.2
All Others[a]	5.0
TOTAL	19.2

[a] It does not include schools.

Source: Gustavo Velutini, "Investigacion del Mercado de Pollos Beneficiados en el Distrito Valencia al Nivel de Detallistas," Valencia. Unpublished Research Paper, 1970.

As can be observed, retail outlets accounted for four-fifths of the total volume and supermarkets and convenience grocery stores showed a marketing share larger than 50 percent. Chicken barbecue stores deserve special consideration as a broiler outlet because of their relatively small number and the large volume of broilers marketed through them. Data shown in the aforementioned research paper revealed that there were only six chicken barbecue stores in Valencia,

through which 12.7 percent of the ready-to-cook plus broilers were marketed.

Marketing Practices

Marketing practices for ready-to-cook plus broilers in Venezuela are greatly influenced by the structure of food retailing. The size and frequency of replacement orders, the packaging and display of broilers, and the selling practices as well, depend upon the store size.

Small grocery and meat stores usually ask for small replacement orders, which should be delivered daily. The order size is usually larger on Fridays and Saturdays because of the larger sales volume of broilers during weekends. On the other hand, larger stores and supermarkets place fewer but larger orders, one of which usually has to be delivered on Fridays.

Retail stores ostensibly offer broilers by processors grades and brand names. However, practically all broilers are sold to retailers as processors' first quality product and only a few cases of brand differentiation have been observed. For example, there was a brand in Maracaibo, Zulia, for which a premium price ranging from four to six cents per pound higher than other brands in the market was reported by processors. Quality has been indicated by consumers as the source of this brand differentiation.

Retailers seldom buy frozen broilers from processors.

According to the findings of the research conducted to investigate marketing of broilers through retail and institutional outlets in Valencia, the following are the reasons indicated by retailers for not buying frozen broilers:

TABLE VI-3

RETAILERS REASONS FOR NOT BUYING FROZEN BROILERS

VALENCIA 1970

Reasons	Respondents	Percent
Consumers don't like frozen broilers	86	47.3
They are not frozen fresh	57	31.3
Broilers are required fresh	34	18.7
They are not offered	3	1.6
They lose flavor	2	1.1
TOTAL	182	100.0

Source: Gustavo Velutini, "Investigacion del Mercado de Pollos Beneficiados en el Distrito Valencia al Nivel de Detallistas," Valencia. Unpublished Paper.

As can be noted, the three major reasons indicated in this table are closely related. In fact, broilers are required fresh because consumers do not like frozen broilers, and consumers do not like frozen broilers because of lacking confidence in the product.

Broilers are primarily sold as the whole bird, packaged in a plastic bag, exactly as they are received from the processing plant; that is, dressed and eviscerated with the liver, gizzard, and feet placed inside the broiler cavity

and part of the head on - ready-to-cook plus form. In some supermarkets, broilers are cut up and sold either as complete broilers or as selected or individual pieces in tray-packs. The cutting operation is usually performed behind the counter or in a cutting room.

Broilers are displayed according to two general procedures: (1) inside a glass showcase and (2) in open self-service counters. The former method is most common in small grocery and meat stores, which frequently display broiler in the same showcase with beef and pork. The second display procedure is followed by large stores and supermarkets. They usually display whole broilers at one extreme of the open self-service counter, mainly because of the appearance of the product and problems due to wet packages. This problem can be better clarified by explaining that processors frequently make some perforations through the broiler container in order to allow the drainage of bloody water. This, together with the display of broilers in a deep counter, favors the external contamination of containers, giving rise to the foregoing problem which undoubtedly hurts the image of the product in the minds of consumers.

The special price sale promotions organized by supermarkets have had their impact on the broiler industry so far, because chicken is many times chosen among the special priced items. However, supermarkets in the country seem to place little emphasis on broiler quality; thus many

customers would rather buy broiler meat in a specialty or convenience store.

The time lapse in the marketing of broilers in Venezuela is lower than that in developed countries. To illustrate this point, a shipment of processed broilers will be traced from a large processing plant in Las Tejerias, Aragua, to a homemaker in Caracas. Live birds are hung on the processing line directly from trucks on let's say Thursday morning. By Thursday afternoon or evening the broilers are received in the distribution warehouse in Caracas. The birds are distributed to retail stores and other outlets on Friday. They are also displayed in refrigerated retail counters on Friday, the homemaker buys them on Friday or Saturday, and cooks the birds on Friday or Saturday. This means a total time lapse of three days. This time can be shortened or lengthened, depending on marketing conditions. For example, the time lapse for broilers processed on Saturday could be, and many times is, as low as one day. Of course, this is not a problem itself. The problem arises from the interaction of the broiler consumption patterns and the short shelf life of the product which make processing plants process and market the greatest volume of ready-to-cook plus broilers during week-end days. This brings about an unbalanced performance which hinders the achievement of greater efficiency through the use of processing and marketing facilities.

Finally, the irregular control of broiler holding temperatures while stored or displayed at stores and supermarkets should be mentioned. This favors bacterial growth and affects quality and appearance of the product.

Prices Received and Retail Marketing Margins

Prices received by retailers vary during the year and among regions. On the whole, retail prices have the tendency to reflect changes in farm prices, but month-to-month variations have not been as pronounced as in farm and wholesale prices. This affects marketing margins per pound of ready-to-cook plus broiler, which year around tend to be larger when farm prices are lower. Table VI-4 illustrates the average retail marketing margins in Venezuela from 1960 to 1970.

TABLE VI-4

AVERAGE RETAIL MARKETING MARGINS IN VENEZUELA

1960-1970

Year	Average Retail Price ¢/lb	Average Wholesale Price ¢/lb	Marketing Margins ¢/lb
1960	58.7	53.2	5.5
1961	54.6	45.6	9.0
1962	51.1	44.5	6.6
1963	49.4	42.4	7.0
1964	48.3	41.3	7.0
1965	47.7	41.1	6.6
1966	48.9	42.1	6.8
1967	47.0	40.6	6.4
1968	47.5	40.4	7.1
1969	47.6	39.5	8.1
1970	44.6	37.7	6.9

Source: Venezuela, Ministerio de Agricultura y Cria, Anuario Estadistico Agropecuario, Selected Issues.

Analysis of this table reveals that average retail prices have generally followed the downward trend of average wholesale prices. From 1960 to 1965 the average retail price declined from 58.7 cents per pound of broiler to 47.7 cents per pound. It went up in 1966, mainly because of an increase in feed prices, and showed an inexplainable increase in 1968 and 1969. On the other hand, marketing margins do not show a definite trend because they are the result of a dynamic adjustment process in the functions of retailing and wholesaling which affect prices at the several levels. For example, average wholesale prices declined as

much as 7.6 cents per pound from 1960 to 1961, while average retail prices declined only 4.1 cents per pound. The following year, the decrease in average retail prices was 2.4 cents per pound larger than that experienced by wholesalers.

Comparison between regional prices and marketing margins is shown in Table VI-5. This table indicates the average wholesale and retail prices and retail marketing margins in three representative cities of the three regions: Maracaibo in the West, Caracas in the Central region, and Puerto La Cruz in the East. As can be observed, retail and wholesale prices have always been lowest in the Central region (Caracas). Prices in the West (Maracaibo) have been higher than those in the Central region, but lower than in the East (Puerto La Cruz). On the other hand, since 1966 marketing margins have always been smaller in Caracas. This is mainly because Caracas food stores show larger sales volumes and a faster turnover than stores in other cities.

Finally, the reader's attention is called to the wholesale price differences among regions. In 1970 for example, the average wholesale price difference between Caracas and Puerto La Cruz was as large as 11.2 cents per pound, while transporting costs were known to be considerably lower than than that difference. This tremendous difference was possible because of local barriers of all types and traditional practices which have established some kind of invisible

TABLE VI-5

AVERAGE RETAIL AND WHOLESALE PRICES AND RETAIL MARKETING MARGINS IN MARACAIBO, CARACAS, AND PUERTO LA CRUZ

1965 - 1970

	MARACAIBO (WEST)			CARACAS (CENTRAL)			PUERTO LA CRUZ (EAST)		
Year	Average Retail Price ¢/lb	Average Wholesale Price ¢/lb	Marketing Margin ¢/lb	Average Retail Price ¢/lb	Average Wholesale Price ¢/lb	Marketing Margin ¢/lb	Average Retail Price ¢/lb	Average Wholesale Price ¢/lb	Marketing Margin ¢/lb
1965	51.5	44.1	7.4	46.2	37.8	8.4	55.1	45.9	9.2
1966	52.1	44.0	8.1	46.3	40.6	5.1	55.6	45.5	10.1
1967	50.5	42.9	7.6	44.0	38.0	6.0	54.8	48.0	6.8
1968	52.0	42.8	9.2	44.1	37.9	6.2	55.1	48.0	7.1
1969	52.5	42.6	9.9	44.5	36.1	8.4	56.4	47.1	9.3
1970	48.4	40.6	7.8	41.0	34.3	7.7	55.6	45.5	10.1

Source: Venezuela, Ministerio de Agricultura y Cria, Anuario Estadistico Agropecuario, Selected Issues.

market limits in Venezuela.

Final Considerations

Analysis of broiler marketing channels and practices in Venezuela has revealed that:

1. Broilers are marketed at retail by processors' grades and brands.

2. The food retailing structure affects the marketing of broilers because of the need for daily deliveries of small replacement orders to many scattered locations and the irregular control of holding temperatures while the product is stored or displayed at stores.

3. Supermarkets and grocery stores, meat stores, and fast food stores are the major outlets for processed broilers.

4. There are three well-defined regional markets: Western, Central, and Eastern markets.

5. These three markets show strong local barriers which establish some kinds of limits, mainly due to traditional practices found in the industry.

Next, in Chapter VII, the organizational aspects of the industry are analyzed.

CHAPTER VII

FACTORS AFFECTING SUPPLY: ORGANIZATION OF PRODUCTION

INTRODUCTION

As indicated earlier, in most countries in which it exists, the broiler industry has undergone similar experiences relating to its growth. Initially, expansion has been rapid and the increase in demand has been sufficiently rapid to absorb the increasing supply. Later on, the rate of expansion has been greater than the increase in demand, giving rise to severe problems of overproduction and price uncertainty. This has influenced the organizational structure of the industry and has brought on changes and adjustments in the roles played by different participants and in the managerial approach followed to accomplish the industry's task.

Having reached this stage, broiler prices have been almost constantly moving downward and the industry has attempted to exploit both the economies of scale and the economies of coordination by vertically integrating various stages of production and processing. In this way, integrators hope to minimize bottlenecks, optimize the use of physical capacity and the efficiency of each participant stage, and, ideally, adjust demand to supply in volume as well as in time.

Analysis of the way in which these changes and

adjustments have taken place in developed countries, and a comparison with the structural evolution and characteristics of the Venezuelan broiler industry, will be useful in selecting some of the factors that would allow the latter to shorten the path toward improved market coordination and performance.

Organization of Production in Developed Countries

Hatching-egg farms, hatcheries, feed mills, broiler farms, and processing plants have already been indicated as the principal stages of the broiler industry. Initially, each of these stages was primarily a separate and independent unit, with the possible exception of the hatchery supply farms which, since the early days, have tended to be affiliated with individual hatcheries, through informal agreements, contract, or common ownership. At that time, commercial transactions took place at each stage. Nevertheless, as the scale of operation in the industry has grown, the relationship among firms in different stages has increased and made it possible to eliminate most of the commercial transactions, although the functions to be performed have remained approximately the same.[1] This brought about the adjustment of

[1]Actually, integration impedes pricing efficiency at some stages because only a small fraction of the total of a stage commodity, live-broilers for example, is entering into market price formation.

one stage's output to the next stage's input and, finally, led to vertical integration.

The major reasons leading toward integration have been:

1. The integrators' desire to increase their overall volume of business and, at the same time, maintain a balanced operation of hatching egg-farms, hatcheries, feed mills, grow-out facilities, and processing plants.

2. The ability of the integrated operator to exploit both the economies of scale and the economies of coordination by reaching his optimum level of production in each stage, thus lowering costs and prices.

3. The integrator's possibility of strengthening his bargaining power with the big food retailing organizations.

4. The greater financial capacity of integrators, which enables to adopt new ideas and methods more rapidly.

On the other hand, the following have been indicated as the main disadvantages associated with vertical integration:[2]

1. The management may lack the ability required to coordinate the stages of production efficiently; therefore the whole operation may become expensive due to excessive overhead costs and increased unit costs of the product. In

[2]See for example: Barton A. Westerlund,"Broiler Market Prospects for the Independent Processor, with Special Reference to Arkansas," Little Rock, University of Arkansas 1963; and Eric S. Clayton, "The Economics of the Poultry Industry," London, Longmans, Green & Co., Ltd. 1967.

an integrated form or programs, a single mistake in one stage may penalize the whole operation and, thus, affect the overall performance.

2. The integrated firm involved in the entire channel requires more capital and may have to assume more risks than an independent firm operating in one stage.

3. It is possible that optimum capacity may not be attainable at each production stage.

4. Vertical integration reduces the independence of growers.

In addition to vertical integration, some firms have integrated horizontally. In the broiler industry this kind of integration tends to be more of a cooperative agreement between firms in order to carry on together the same stage or operation, with all other stages or operations remaining independent of each other. This kind of agreement is usually pursued to achieve further economies of scale in production and input procurement, distribution, and promotion, as well as to strengthen the bargaining power of the integrated units, enabling them either to purchase their requirements or sell their products in advantageous terms.

Who is the Integrator?

The integrator can be described as an entrepreneur who arranges, through ownership, contract, or other means, to control and manage several stages in the process extending

from broiler hatchery supply flocks through the processing and distributing stages.[3]

The path toward integration has followed different directions in different countries. In the United States, the general tendency has been for feed dealers and feed manufacturers to integrate the growers, hatcheries, and other stages - forward integration. On the other hand, the integrator in England has generally been the processor, who has directed and fitted together other production stages such as the grow-out operation and the hatchery - backward integration. In spite of this difference, the organization of the broiler industry shows the following similarities in both countries:

1. Integration is based on contracts at some stages, such as between feed manufacturer and growers in the United States, and among processor, growers, and hatchery in England.

2. Decision points have tended to shift in the direction of the ultimate market, either because integrators have extended their business forward by the acquisition of processing plants or because they already were operating in that stage. Nevertheless, no matter how the movement was, integrators have been placing more and more emphasis on the market for final products.

[3]See Bernard F. Tobin and Henry B. Arthur, "Dynamics of Adjustment in the Broiler Industry" Boston, Division of Research, Graduate School of Business Administration, Harvard University, 1964.

Effectiveness of Changes in Organization

As indicated, the broiler industry has gone through a continuous process of changes, which has led it toward consolidation or coordination of activities into fewer articulated units. These units are systems in which total integrated efforts are directed toward the accomplishment of a predetermined objective: to increase the overall volume of business and, at the same time, maintain a balanced operation of hatching egg-farms, hatcheries, feed mills, grow-out facilities, and processing plants.

The following are general principles concerning such systems:[4]

1. It is the performance of the overall integrated unit which is of major importance.

2. Stages need not have optimum design on an individual basis, because emphasis is based upon their integrated relationship with other stages or components in the system.

3. There exists between stages a funcional relationship which may stimulate or hinder combined performance. This relationship is commonly called trade-off.

4. It is explicit that stages linked together as a system can, on a combined basis, produce a result greater than that which is possible by individual performance.

[4]See: Donald J. Bowersox., Edward W. Smykay, and Bernard J. LaLonde, "Physical Distribution Management," The Macmillan Company, 1968. p. 103.

In fact, the desired result may not be attainable without integrated performance.

The effects of these principles on the broiler industry's performance have been as follows:

1. Decisions are based on the function of the overall integrated system, rather than on the performance of an individual stage. As a result, the response time to changes in prices has gotten longer and, at present, short-run variations are smoother than before.

2. Stages are designed so that they are properly geared, each to the other, to minimize bottlenecks and optimize the use of physical capacity and the efficiency of each stage.

3. The production stages are programmed to supply various quantities over or under the average weekly requirements of processing plants, depending upon the changes in demand throughout the year.

4. Economies of scale and economies of coordination have been achieved through vertically and horizontally integrated systems. Examples illustrating this are: the interest of the integrator in increasing the number of birds each grower handles, in order to reduce costs of supervision and bookkeeping; and the substantial cost reductions achieved by combining the economies of large processing plants with the economies obtained by the reduction in the average length of haul. The latter is usually achieved

because of the high density of broiler production.

The integration movement has not eliminated instability in the industry, and sometimes it has led to periods of disturbances and consequent adjustments, mainly due to misinterpretation of demand and price trends and the interests of the integrators in keeping their processing plants working at full capacity, whatever the conditions of demand (England), or increasing sales of feedingstuff, given little attention to the large increase in supply of broiler meat which has followed such a policy (the United States). Nevertheless, the integration movement seems to be a rational process rather than an exploitive process, and it has already made significant contributions toward a more effective and efficient performance of the industry.

Organization of Production in Venezuela

The firms that participate in the broiler industry in Venezuela can be classified as follows:

1. Firms or people engaged in only one stage, primarily the growing of broilers.

2. Firms that initiated their activities in one stage and then expanded through new ones. The most frequent case is the grower who expanded his activities through processing and marketing broilers. However, there are others, mainly feed dealers, who saw better perspectives and were endowed

with more capital to expand their operations through hatcheries and hatching-egg production also. These firms are the typical owner-operated firms characterized by poor management and organization, but which have been successful so far, since profits have come easily.

3. The feed manufacturing companies which, since the very beginning, expanded their activities through hatching-egg production and hatcheries, and gave technical and financial assistance to growers. Lately, in their efforts to improve feedingstuff sales, they have expanded through processing plants and have become more interested in the marketing of broilers.

In spite of this apparently highly integrated organization, little coordination is found between different stages. To understand better the meaning of this statement, the integration movement in Venezuela is analyzed in the following section.

The Integration Movement in Venezuela

As indicated earlier, vertical integration has existed in the Venezuelan broiler industry since its start, when feed mills expanded their activities through hatcheries and hatchery supply flocks. Forward integration, that is, integration of the growing-out, processing, and marketing

functions, is a more recent movement initiated by feed mills.[5] However, this movement was started earlier by feed dealers who, in fact, can be considered as the prime movers in the contract integration system in Venezuela. During the last ten years the feed dealers have been almost completely displaced in some areas by the feed mills. Obviously, they cannot compete with feed mills, which are able to offer technical and financial assistance.

Lately, feed mills have either purchased, built, or developed some kind of agreement with processing plants. This has allowed them to bypass dealers by financing growing operations and the processing industry directly, rather than indirectly, through liberal credit policies, as they did before.

Broiler price decline and narrowed profit, as well as unstable production, are the main reasons that have encouraged poultrymen, especially feed mill managers, to work toward better coordination between the different stages of the industry. However, most feed mill efforts are still oriented toward increasing feedingstuff sales rather than improving efficiency and the industry's organization. Actually, decisions are made in several stages, according

[5]Feed dealers are engaged in the selling and merchandising of feed. Feed mills, in contrast, perform both functions and also manufacture feed.

to their individual performance. As indicated in foregoing chapters, prices of broilers at production, wholesale, and retail prices vary throughout the year, but the prices of feed, chicks, and hatching-eggs show no variance. Therefore, the first to react to changes in prices is the grower, who tries to increase or decrease his production according to live-broiler prices in the market. The effects of this reaction are usually experienced 10 to 12 weeks later. Of course, this affects the whole "integrated" system, hindering the achievement of minimum bottlenecks and maximum use of physical capacity and efficiency of each stage. This situation, together with the lack of information and misinterpretation of price trends, as well as the feed mill policy toward increasing feedingstuff sales, has led periodically to conditions of destructive overproduction.

Economies of scale and economies of coordination have not been fully exploited in Venezuela. Little research has been conducted in these areas, and the economies of large scale already achieved have been the result of the increasing influence of new technology on the industry. So far, firms in different stages have usually been designed without taking into consideration factors which relate one stage to the others. In other words, stages are usually designed with more emphasis on individual performance, rather than upon their integrated relationships with other stages. This has made it difficult to combine reductions in total costs due

to economies of larger processing plants, for example, with economies of assembling and hauling broilers from farms to the plant. Furthermore, production is many times programmed in such a way that many lots are ready to be processed at the same time, and then the assembling and hauling of broilers grown in the same house are performed in several days, giving rise to higher costs and creating unpleasantness for the growers.

Among the reasons hindering the achievement of economies of coordination and a better overall performance of the broiler industry in Venezuela are:

1. The emphasis placed on the individual performance of each stage. The integrated complexes are frequently constituted of individual firms in successive stages, owned by the same people, but separated in order to lower overall taxes. This situation makes managers of these firms more interested in their firm's own performance, rather than in the performance of the overall integrated broiler complex.

2. Lack of technological knowledge and managerial skill, especially among processors and marketers. This is mainly due to the little emphasis that has been placed on these functions in Venezuela so far.

3. Lack of confidence between people engaged in successive stages, such as feed mill representatives and growers, growers and processors, and so on. This seems to be a consequence of the market structure and the reasons

already explained in this section.

Poultry Associations in Venezuela

There are national and regional poultry associations in Venezuela. The most important is the National Poultry Federation, which is comprised of broiler growers, table-egg and hatching-egg producers, hatcheries, processing plants and feed mills. In general, the small growers, producers, and processors are not affiliated with this federation. However, its members are the largest poultry firms in the country; thus, they account for a very important volume of production.

The federation has indicated its main objective is to procure the protection of its members. The main roles successfully played by the federation have been: (1) to represent the agricultural subsector before the government and legislators, and (2) to foster the relationship of its members with other national and international poultry associations.

In December, 1970, the National Poultry Federation and the Association of Feed Manufacturers got together to create the Special Fund for Poultry Development. The purpose of this fund was to: (1) foster the consumption of poultry meat and eggs, (2) avoid the price deterioration of poultry products, (3) give financial assistance to those entities that needed it, and (4) foster industry planning,

according to its characteristics and market peculiarities.[6]

The fund capital was one million bolivars, about $ 225,000, contributed by the feed mills affiliated with the Association of Feed Manufacturers.

Later on, in 1971, the fund was replaced by the National Poultry Fund, an association constituted of the aforementioned two associations, the Grower Association of Zulia, and the Federation of Agricultural Producer Associations. The major objectives of this new fund are to:[7]

1. Guarantee, according to its possibilities, the stability of remunerating prices for poultry products, especially broilers and table-eggs.

2. Foster production planning, based on the supply and demand characteristic of the Venezuelan poultry and poultry market.

3. Take the advisable measures to achieve effective control of hatching and hatching-egg flocks.

4. Take the necessary measures to eliminate seasonal crises whenever they occur, being careful not to stimulate a disorderly expansion of the industry.

5. Direct local and national advertising campaigns to promote the consumption of broilers and eggs.

6. Analyze and explore international markets in order

[6]"El Nacional" December 4, 1970

[7]According to the "Estatutos del Fondo Avicola Nacional."

to implement an adequate poultry product export policy.

7. Stimulate the organization of cooperatives or similar organizations which allow improvement in the commercialization of the products.

8. Propitiate the establishment of norms of quality and grading systems.

9. Give assistance to and collaborate with producers to improve the quality of their product so that they can fulfill the quality norms that will be established.

The capital of this fund is constituted of 2 percent of the total amount of money received by feed mills through the sale of poultry feed. Of this amount, one-half is contributed by feed mills and one-half by growers or producers. Nevertheless, the statutes of the organization establish a top and bottom limit of capital in the fund: 10 million bolivars (nearly $ 2,250,000) and 5 million bolivars. The statutes also state that when the fund reaches the superior limit, then feed mills do not have to contribute the mentioned 2 percent, and must reduce feed prices by 1 percent; when the amount of capital in the fund reaches the inferior limit, then feed mills have to contribute again with the foregoing 2 percent and reinstate feed prices.

The author knows of two kinds of measures taken by the National Poultry Fund so far: (1) the guarantee of a minimum live-broiler price for growers, and (2) arrangements directed to eliminate seasonal crises. Although the

former measure was mentioned in Chapter IV, the procedure is explained here. Processors have to buy live-broilers at a minimum price of Bs. 2.50/kg (¢ 25.3/lb); and the difference between the market price and this minimum price is given to processors by the fund. On the other hand, arrangements directed to eliminate seasonal crises have been used, at least once, as follows: the live-broiler market price was very low so that, in order to make prices go up, the fund advised hatcheries to decrease their production by one-fourth and it agreed to pay hatcheries a determined amount of money for each chick sacrificed.

Both measures are seen by the author as troublemakers rather than solutions. The minimum price always allows profits, no matter what the efficiency of growers is; therefore, it constitutes a path toward the reduction of competition and a brake on progress. The arrangements on reimbursement during seasons of prospective low prices may reduce production temporarily but does not encourage growers to adjust their production of broilers to match market needs.

Undoubtedly, the National Poultry Fund can do a very good job for the poultry industry in Venezuela by conducting and stimulating research on which to base their decisions, propitiating the establishment of norms of quality and grading systems, giving technical and financial assistance to producers, and promoting egg and poultry meat consumption.

Final Considerations

Considerations with regard to the organization of broiler production in Venezuela have indicated that:

1. The integration movement in Venezuela is similar to that experienced in the United States. That means forward integration from inputs to processing plants, with feed mills being the major integrators.

2. It is very difficult, almost impossible, under the present conditions to maintain a balanced operation of hatching-egg farms, hatcheries, feed mills, growing-out facilities, and processing plants. This is mainly due to the emphasis that has been placed on the individual performance of each stage so far, rather than on the overall performance of the integrated complex.

3. Economies of scale and coordination have not been fully exploited thus far, mainly because of lack of technological knowledge and managerial skill in some of the industry's stage, as well as the aforementioned emphasis on individual performance.

4. Lack of confidence exists between individuals engaged in successive stages of production and marketing.

5. A National Poultry Fund has been organized in Venezuela, for the purpose of fostering an adequate planning of the industry's development according to market characteristics. Although the author disagrees with some of the

measures taken in crisis time, he recognizes the positive influence that this organization can exert on the growth and development of the industry if, through it, research and innovations are stimulated as a major ingredient for increasing efficiency and reducing unit costs of production.

CHAPTER VIII

THE VENEZUELAN BROILER INDUSTRY: EVALUATION OF ITS PERFORMANCE

INTRODUCTION

Market performance was defined by Richard Caves[1] as: "the appraisal of how much the economic results of an industry's market behavior deviate from the best possible contribution it could make to achieving these goals." Joe S. Bain[2] complemented this definition by stating: "For firms acting as sellers, these results measure the character of the firm's adjustments to the effective demands for their outputs; for firms buying goods, they measure the quality of adjustments made by firms to the supply conditions of the goods they purchase." In this study, the market performance of the Venezuelan broiler industry is analyzed according to the foregoing statements and, thus, judged in light of their actual performance placed beside their potential.

The objective of this chapter is, therefore, to evaluate the Venezuelan broiler industry as it is, trying to

[1]Richard Caves, "American Industry: Structure, Conduct, Performance." Prentice-Hall, Inc. 1967. p. 97

[2]Joe S. Bain, "Industrial Organization," John Wiley & Sons, Inc., p. 372.

locate reasons for the gaps between actual and potential performance. The findings of this chapter are used in Chapter IX to suggest ways to improve market performance and coordination.

Basis for Evaluation

Evaluation of market performance is always a very difficult task because performance is multidimensional and thereby extremely complicated. Thus it is convenient to establish the dimensions on which the evaluation of the Venezuelan broiler industry is going to be based, so the reader can be aware of the limitations arising from them.

This study evaluates the Venezuelan broiler industry in the dimensions of technical and allocated efficiency and other dimensions such as progressiveness and product performance. Explanation of each one of these dimensions is given while evaluating the Venezuelan broiler industry.

The Venezuelan Broiler Industry: Evaluation of its Performance[3]

Technical Efficiency

Technical efficiency figures among the most important factors affecting any industry's performance. It is usually measured in terms of the relationship between the actual and the lowest attainable costs for the outputs the industry produces and distributes. Both actual and potential costs should refer to real costs in terms of human and physical resources used, regardless of any differences in money prices that firms may pay for given real resources.

The technical efficiency of an industry is influenced by: (1) the technical efficiency of its organization, and (2) the internal efficiency of its individual firms. In this discussion a third closely related factor is included: the relationship of market structure to technical efficiency.

Technical Efficiency of the Venezuelan Broiler Industry Organization

The efficiency of market organization is strongly influenced by the relative efficiency of: (1) the scales of

[3]The performance dimensions for this evaluation were selected from Chapter X of the already cited book of Joe S. Bain.

existing plants and facilities, (2) the existing degrees of vertical integration or coordination, and (3) the rates of utilization of existing plants and facilities.

In Venezuela little research has been conducted to investigate the nature of scale effects on costs at different stages of the broiler industry. Therefore, it is difficult to establish whether there are many plants and facilities operating within a range of optimal scale. It has been indicated throughout this study that feed mills, hatcheries, and hatchery supply flocks are highly concentrated stages, in which economies of large scale have already been achieved. However, it is impossible for the author to judge their efficiency precisely, as far as scale is concerned, because of lack of data and research studies on which to base this judgement. Have increases in size always resulted in economies of scale or, to the contrary, have they at times been beyond some critical size so that diseconomies of very large scale production make unit cost rise in response to "excessive" growth? In particular, is the size of the largest hatchery within the range of optimal scale or is it larger than the optimum size range? These are interesting questions that cannot be answered in the light of the findings and observations of this study.

Production and processing stages, on the other hand, show an uneven growth and development, which accounts for the existence of many small farms and processing plants.

As indicated earlier, broiler production of small farms (housing capacity lower than 10,000 brids) represents a very important share of total production. Small broiler processing plants (processing capacity lower than 400 birds per hour), however, account for a relatively small volume; 83 of 103 plants process only about 20 percent of the total production. Most of these small firms are the reflection of a chronic condition which is in part supported by the food retailing structure and the poor quality of the product. Undoubtedly, economies of scale are seldom accomplished in broiler processing plants in Venezuela. This condition is slightly better for broiler farms.

The food retailing structure affects distribution and marketing of broilers because of the need for daily deliveries of small replacement orders to many scattered locations. This situation hinders the achievement of economies through large scale distribution and, as indicated, supports in part many of the small, inefficient processing plants.

Vertical integration of successive processes or stages has been indicated to be a way of achieving economies of coordination in the broiler industry. In Venezuela, there is at present a tendency toward integration; nevertheless, substantial opportunities for increasing efficiency and reducing costs through the coordination of production and production density, assembling, and processing, for example,

have not yet been exploited. Furthermore, the relationship between successive stages or functions in terms of optimum size and physical efficiency is seldom analyzed unless an economic failure occurs. Therefore, there is a lot of room in the Venezuelan broiler industry for achieving further economies of coordination.

In regard to the relative efficiency of rates of utilization of existing plants and facilities, it has been indicated that hatcheries show a somewhat high rate of utilization and that the number of broiler lots grown per year in grow-out facilities is between 4.2 and 5, which is an acceptable rate of use. Processing plants, on the other hand, show an average rate of utilization lower than 60 percent. This situation becomes worse than it seems to be because of the short shelf life of the product and the consumption pattern, which require processing plants to process a higher volume of broiler during the second half of the week, and many times lead them to work extra time. This practice has given rise to undesirable phenomena such as excess of capacity, decrease in efficiency, and higher costs.

Internal Efficiency of Individual Firm of the Venezuelan Broiler Industry

Efficiency of individual firms varies widely from one firm to another. Nevertheless, it is possible to classify all the firms into two big groups: (1) all firms having

poor accounting procedures and (2) other firms having somewhat appropriate accounting procedures. The former group is mainly constituted of all the small and some medium-sized firms. They are characterized by a relative low efficiency on (1) selecting and using productive techniques and methods, (2) selecting cost-minimizing combinations of productive factors, and (3) administrative operations. They usually do not take into consideration fixed costs, and generally operate as long as they can cover variable costs. Lack of technological knowledge and absence of quality control and maintenance programs are among the recommended practices they do not follow.

Large firms usually show a more appropriate accounting procedure and relatively higher efficiency. In general, these firms show progressiveness and are leaders of the Venezuelan broiler industry. They usually try to select and use productive techniques and methods, and cost-minimizing combinations as well. Initially, most of these firms were engaged in one or several stages of the industry except processing and marketing. Lately, they have had to expand their operations to these stages as well, but little research has been conducted in those areas and little emphasis has been placed on product quality. Therefore, lack of technological knowledge and poor quality control and maintenance programs are characteristics found in processing plants and marketing channels of processed broilers.

Relationship of Market Structure to Technical Efficiency of the Venezuelan Broiler Industry. This section is presented to discuss the relationship of seller concentration, condition of entry, and product differentiation to the technical efficiency as affected by the scales and rate of utilization of the Venezuelan broiler industry's plants and facilities.

Greater technical efficiency has been achieved in the most concentrated stages of the Venezuelan broiler industry: feed mills, hatcheries, and hatchery-supply farms. These stages also show relatively high barriers to entry, mainly due to the substantial capital investment required, the limited market for their products, and the inherent risks involved in performing these functions. This seems to indicate that, at least for these stages, a relatively high concentration has allowed the growth of firms of relatively large size, and thus has reduced the incidence of inefficient small plants and firms.

The production and processing stages, on the other hand, have shown low concentration and relatively easy entry. These stages have maintained a somewhat substantial group of inefficient small plants and grow-out facilities, and are more likely to attract participants than the so-called input stages of the broiler industry. Two major factors help support the structure of these stages: (1) the local barriers to processed broiler and (2) the

atomistic structure of food retailing. Nevertheless, price cost squeeze in production and reduction in marketing margins to processors are expected to induce the least efficient growers and processors to adjust their costs or leave the industry, if protective measures, which allow profits no matter what the efficiency of growers is, are not taken.

Allocative Efficiency

Allocative efficiency refers to the size of the industry's output, as judged by the relationship of its long-run selling prices to its long-run marginal costs of production long-run average profit. Before evaluating this dimension of the Venezuelan broiler industry, an introductory discussion of this point will be undertaken.

An excess long-run profit rate on sales can be: (1) equal to zero, (2) positive, or (3) negative. When the long-run average profit rate is equal to zero, it means that long-run price is equal to long-run average and marginal costs and, thus, it is indicative of ideal allocative efficiency for the industry.[4] When the long-run average profit rate is positive, it reveals an allocative inefficiency or misallocation of resources, which depends on

[4]If the accounting profit equals the market rate of interest, it is also indicative of ideal efficiency for the industry.

both the size of the excess profit rate on sales and the price elasticity of demand for the industry's output. Finally, a negative long-run average profit rate reveals a misallocation of resources, and a smaller output would be required to equate price to marginal and average costs.

Obviously, the long-run average profit return for the industry should ideally have a tendency to approach a basic interest rate on the owner's investment. Nevertheless, this does not imply that short-run excess profits or net losses to individual industries or firms are not desirable. On the contrary, they should occur as necessary results of the functioning of the market system. Quoting Bain, it is possible to conclude that: "...losses are ideally a penalty imposed by the market to force an efficient adjustment of supply to demand and thus, ideally, are therapeutic in their effects...."

Analysis of the long-run average profits in the Venezuelan broiler industry is difficult to perform, because of absence of adequate information. However, some evidence seems to indicate misallocation of resources in the industry. Among these evidences are: (1) the existence of many small, inefficient firms with relatively high costs of production; (2) the excess of capacity shown in several stages; (3) the little attention given to the exploitation of economies of scale and economies of coordination; and (4) the severe problem of short-run instability

resulting from imbalances of supply and demand. Actually little or no research has been conducted to analyze the supply and demand patterns for processed broilers in Venezuela; rather, decissions on supply are affected by growers' own expectations and somebody's interpretation of demand trends. Therefore, the recent decision of the National Poultry Fund to guarantee a profitable minimum price to growers will interfere with the functioning of the market mechanism and induce a failure in the allocation of resources unless effective measures to restrict supply and foster efficiency are taken. Otherwise, this measure will foster increased production, allow the existence of relatively inefficient firms, and avoid the reduction of what seems to be a chronically excess capacity of some stages such as processing.

Progressiveness in Production Techniques

An industry's progressiveness can be properly evaluated in terms of how well it has exploited the available opportunities for new technology and innovation of more efficient procedures. Design of new equipment is seldom accomplished in Venezuela because the broiler industry is going through a developing process, in which techniques available from other countries can be, and actually are, satisfactorily adjusted to its needs. On the other hand, large firms, mainly feed mills, are typically responsible

for nearly all technological innovations. Therefore, most available techniques in the areas of feed mill, hatchery, hatchery-supply flock and grow-out operations have already been considered and adjusted according to the Venezuelan needs and financial possibilities. Processing and marketing, however have not shown the same degree of progressiveness because the product was easily sold. Today, problems of short-run instability are acting as incentives for improving processing and marketing techniques.

Product Performance

Product performance is analyzed in terms of general level of quality and variety of product forms available in the market. As indicated, ready-to-cook plus broilers are characterized by short shelf life, which gives rise to problems at different stages of the industry, especially at the processing and marketing stages at processing plants, because it affects processing schedules and induces a low capacity rate of utilization; and during marketing, because of the effects of shelf life on product appearance and the way it affects consumer attitudes toward the product.

Processing techniques have shown little changes over time. Actually, most improvements in the product have come from improvement in refrigeration systems at processing and retail levels. Nevertheless, control of broiler holding temperatures is still very irregular throughout all the

marketing channels.

Most broilers are marketed as ready-to-cook plus birds. Cut-up broilers are only available at a small number of supermarkets, while cooked and canned broiler meat is not available at all. This situation gives little choice to consumers, who usually have to buy a whole bird.

Product performance, then, is not as good as desirable; therefore, its quality should be improved in order to accomplish an improved performance of the processing and marketing functions.

Size of Promotional Costs

Promotional costs refer here to the expenditures made by members of the industry to stimulate the sales volume of their products. In the Venezuelan broiler industry, promotional activities and costs can be classified into two general types: (1) those devoted to informational purposes, and (2) those with a general persuasive orientation. The former are usually carried on by firms to promote their own products; the latter have come as a result of promotional campaigns at the national level, directed by the National Poultry Federation or Feed mills during prolonged periods of overproduction. Nevertheless, promotional costs represent a very small percentage of sales revenue, which is normal in agricultural products.

Market Performance in Other Dimensions

Several other dimensions of market performance are significant and should be indicated in this study. The first is research activity. The author has taken several opportunities in this study to point out the need for more research in some specific areas such as supply and demand patterns, product quality, optimum size of plants and facilities, marketing, and so on. Lack of technological knowledge and appropriate information in these areas: (1) induces misinterpretation of the factors on which to base decisions, (2) hinders the greater achievements which could be accomplished through economies of scale and co-ordination, and (3) prevents the improvement of product quality and appearance.

The second dimension is industry organization and market conduct. Prices of feed, hatching-eggs, and broiler chicks do not vary throughout the year, as a consequence of a tacit agreement among the reduced number of participants in these stages. Since growers still retain a high degree of independence, changes in broiler prices affect them directly and all other stages indirectly. Most independent growers tend to observe current prices rather than the expected prices at time of marketing when they order chicks for placements. As a result, growers respond to high prices by placing more chicks, and to low prices by diminishing chick placements. This behavior affects the

supply-demand relationship and brings on periods of surplus and scarcity - short-run instability. Lately, contracts have been developed to improve this situation, but they have not solved it at all because growers still maintain a high degree of independence.

Final Considerations

The evaluation of the performance of the Venezuelan broiler industry has shown that:

1. Economies of scale seems to have been achieved in feed mills, hatcheries, and hatchery-supply farms. Production and processing stages, on the other hand, show many small, inefficient farms and plants; thus, economies of scale are not often accomplished in these stages.

2. The atomistic food retailing structure hinders the achievement of economies through large scale distribution, and supports, in part, the existence of many small processing plants.

3. Economies of coordination have not yet been fully exploited. The relationship between successive stages or functions in terms of optimum size and physical efficiency is seldom considered.

4. Processing plants show an average rate of utilization as low as 56 percent. This undesirable situation is due to the short shelf life of the product and the

broiler consumption pattern in Venezuela.

5. Firms in the industry can be classified into two broad categories: (1) small, inefficient firms with poor accounting procedures; and (2) large firms, with relatively high efficiency and somewhat appropriate accounting procedures.

6. Some evidence seems to indicate misallocation of resources in the Venezuelan broiler industry. Furthermore, the recent decision of the National Poultry Fund to guarantee a profitable minimum price to growers will interfere with the functioning of the market mechanism and induce a failure in the allocation of resources unless other measures are taken.

7. The industry, in general, has shown progressiveness as far as feed mill, hatchery, hatchery-supply farms, and grow-out operations are concerned, while problems of short-run instability are now stimulating the improvement of processing and marketing techniques, as well as coordination.

8. Product performance is not as good as desirable. Short shelf life affects processing schedules and product appearance.

9. Promotional costs in the Venezuelan broiler industry represent a very small percentage of sales revenue, which is normal for agricultural products.

10. Lack of research in important areas such as

supply and demand patterns, market coordination, and so on, induces misinterpretation of the factors on which to base decisions and hinders the achievements of economies through large scale and coordination.

11. The high degree of growers' independence and the fact that most of them tend to observe current prices rather than the expected prices at time of marketing when they order chicks for placements, are important factors affecting the supply-demand relationship and leading to short-run instability.

CHAPTER IX

THE VENEZUELAN BROILER INDUSTRY: A PROPOSAL FOR IMPROVING MARKET PERFORMANCE AND COORDINATION

INTRODUCTION

Having evaluated the performance of the Venezuelan broiler industry, the next step in this study is to present some suggestions which would narrow the gap between actual and potential performance and lead to a workable or satisfactory performance. To achieve this goal, the author will: (1) define and establish the differences between ideal and workable performance; (2) identify the general norms for some important dimensions of market performance; (3) state the desirable characteristics of a workable performance of the Venezuelan broiler industry; and (4) indicate the recommendable measures, changes, and adjustments to achieve this goal.

Ideal and Workable Performance

Ideal performance can be defined as that in which adaptations of enterprises to their markets enhance the attainment of the overall economic objectives relating to employment, efficiency, income distribution, and equity to the highest possible degree. Workable performance, on the

other hand, refers to reasonable adaptations of enterprises to their markets in such a way that the latter have no verifiable characteristics that are regarded as avoidable and undesirable. This means that to define a workable performance for the Venezuelan broiler industry, it is necessary first to identify the norm for important dimensions of market performance.

General Norms for Important Dimensions of Market Performance

The objective of this section is to present ideals or general norms for some important dimensions of market performance, as stated by Joe S. Bain in his well-known book, Industrial Organization.

1. Dimension: Technical Efficiency. Norm: "...All the output of an industry should be supplied by plants and firms of the most efficient scale, and none should be supplied by plants and firms of inefficiently large or inefficiently small scale. This implies among other things that the number and relative sizes of plants and firms supplying a market should be consistent with the attainment of technical efficiency. Furthermore, the firms of the industry should have an aggregate plant capacity adjusted to market demand in such a way that there is an absence of chronic excess capacity...."[1]

2. Dimension: Allocative Efficiency (Profit Margins). Norm: "...In absence of disturbances, profit margins should

[1]Joe S. Bain, "Industrial Organization," John Wiley & Sons., Inc., p. 15.

move as long-run averages toward amounts just sufficient to pay normal interest returns on owners' investments, plus a "risk reward" to successful firms sufficient to offset the losses of unsuccessful ones. On the other hand, profit margins should be free to have short-run fluctuations (around the indicated long-term average) in response to changing market conditions, and also be free to exceed the minimal level for limited periods in order to reward innovators of new products and techniques for their contributions. In sum, persistent or long-run excess or supernormal profits are generally signs of unworkable performance...."[2]

3. Dimension: Product. Norms: "...The general quality level of the products of an industry should be neither too high nor too low in view of buyers' desires relative to product quality. Products should not be excessively deteriorated, in the sense that they reach such a level that buyers would prefer to pay the extra costs necessary to improve quality. And they should not be excessively improved, enlarged, or made elaborate in the sense that buyers would prefer a lower quality product with the resultant saving in cost...."[3]

4. Dimension: Promotional Costs.[4] Norm: "...A modicum of "promotional" activity and cost devoted to informational purposes are functionally justified, or essential to the effective working of a market system...." "Promotional" activity and cost with a persuasive orientation are not similarly justified from the standpoint of aggregate economic welfare. They reflect, in large part at least, a diversion to sales promotion of productive resources which could otherwise be devoted to producing and distributing a larger volume of useful goods and services...."

Although similar ideals may be established for other dimensions of performance, the aforementioned are sufficient to illustrate the nature of our norms. Undoubtedly, definition of a precise single ideal may prove difficult

[2]Ibid., p. 14.

[3]Ibid., p. 15.

[4]It appears in Bain, p. 413, as selling costs; nevertheless, the author prefers to define it as promotional costs.

at times, but, normally, it is not very difficult to identify ranges of performance which are acceptable. These ranges establish the limits of tolerance for the divergence of workable performance from the ideal and, of course, they may vary from individual to individual. Nevertheless, the author hopes the reader will agree with the general terms in which a desirable performance for the Venezuelan broiler industry is stated in this study.

A Workable Performance for the Venezuelan Broiler Industry

The definition of a workable performance for the Venezuelan broiler industry will be based on the assumptions that:

1. Feed mills, hatcheries, and hatchery-supply farms are able to supply efficiently the inputs required by growers at present and in the future.

2. Food retailing is likely to go through structural adjustments, but its atomistic structure will prevail in the near future.

Feed mills, hatcheries, and hatchery-supply farms are stages which have already achieved economies through large scale and, at present, are working together toward the improvement of their coordination, under the leadership of the feed mills; therefore, an increase in their overall

efficiency is likely to occur in the near future. The food retailing structure, on the other hand, is likely to continue its process of changes and adjustments toward larger self-service stores; therefore, future changes in the broiler industry are not likely to affect the retailing structure.

The establishment of these two assumptions means that, on an individual stage basis, the production, processing, and marketing stages will be dealt with. Nevertheless, knowing that stages linked together as a system should produce a result greater than that which is possible by individual performance, emphasis will be placed on the overall performance of the industry rather than on the individual performance of each stage.

In comparison with the actual performance, a workable performance of the Venezuelan broiler industry should reduce short-run variations and show a more efficient allocation of resources and use and coordination of production factors. This means that:

1. Stages should be as properly geared as possible, each to the other, in order to minimize bottlenecks and optimize the use of physical capacity and the efficiency of each stage.

2. Substantial cost reductions should be achieved and passed on to consumers through combining economies of large scale and coordination.

3. Marginal, inefficient processing plants and grow-out facilities should either improve their efficiency or leave the industry.

4. Product quality should allow a longer broiler shelf life and make it possible to change present processing patterns and improve the image of the product.

5. Local barriers should be eliminated and thus allow the scale of market organization to increase.

Guidelines for a Workable Performance

Having stated the characteristics of a workable performance of the Venezuelan broiler industry, the next step in this study is to suggest the kinds of measures which, according to the author's criteria, would allow the industry to achieve this goal. For this purpose, the recommendations will be presented by subject as follows:

Industry Policy

There are two possibilities as far as industry policy is concerned: (1) to allow the free action or functioning of the market mechanism, or (2) to adopt some kind of measure which interferes with the functioning of the market mechanism, such as a profitable minimum price. In the first case, the matching of supply to demand depends upon individual firm decisions, and the production and marketing

structure of the industry retains its flexibility. Therefore, innovation and efficiency are fostered and the industry should move toward improved performance, reduce unit costs, and pass these reductions on to consumers through lower prices. On the other hand, measures which interfere with the functioning of the market mechanism usually hamper increasing efficiency and help marginal, inefficient firms to remain in business. This would seriously affect further expansion of the industry and constitute a brake on progress.

In light of these observations, the author recommends the route of private risk-bearing and continued flexibility of the free market system.

Human Decisions and Decision Centers

Human decisions and decision centers have been indicated as the critical elements in adjusting supplies to prospective demand. The success of human decisions depends upon the interpretation of appropriate information about future demand and prices. In Venezuela, lack of appropriate information usually induces misinterpretation of the future demand and prices of broilers; therefore, such information is of major importance so far as fluctuation of total supply is concerned. This means that there are two factors of major significance in adjusting supplies to demand: (1) the gathering of appropriate information on

which to base decisions and (2) the interpretation of this information. In regard to the former, the author recommends that research be conducted on the nature of supply and demand trends so that hatchery-supply flocks as well as chick and broiler production can be adjusted to what is estimated to be the market need for broilers during ensuing months. Regarding the interpretation of the information, the author suggests a reduction in the number of decision makers through decisions linked to the integrated complex,[5] and a shift of decision centers in the direction of the ultimate market, but with the recognition of the great influence of feed ingredient costs on the overall performance of the industry.

Collection and Presentation of Data

The National Poultry Fund has indicated as one of its major objectives the fostering of production planning based on the supply and demand characteristics of the Venezuelan market for broilers. To achieve this goal, central collection and rapid presentation of data relating to broiler production and marketing is recommended in this study as an essential basis for the planning of production.

[5]Obviously, this seems to be in conflict with our recommendation of allowing the free action of the market, but the author thinks that consumers will determine broiler prices for each production level.

In this way, relevant information on which to plan production and sales logically could be provided and, thus, improve the industry's performance.

Analysis of such information should allow the members of the industry to: (1) have a better knowledge of the supply and demand patterns and identify seasonal differences; (2) identify those high and low prices in the market which are bound to be temporary and do not indicate enduring strength or weakness in demand for broilers; and (3) have a better knowledge of the effects of changes in wholesale meat prices on processed broiler prices.

Grow-out

It has been indicated throughout this study that one of the most important factors affecting the supply-demand relationship and leading to short-run instability is that most growers, when they order chicks for placements, tend to observe current prices rather than the expected prices at time of marketing. Therefore, it is necessary to strengthen coordination between this stage and processing in order to reduce short-run instability, and thereby minimize bottlenecks and optimize the use of physical capacity of both stages. Strengthening coordination can be achieved through contracts or ownership. Contracts should be fair and foster efficiency so that growers can get an equitable share of the processed broiler price

according to their productive efforts and their contribution to the overall performance of the integrated complex. The integrator, on the other hand, should supply the grower with technological and management advice.

Product

There is no question about the need to improve product quality in order to (1) have a product with a longer shelf life, which would allow processors to change their present processing patterns; and (2) improve the general appearance of the product and thus its image in consumers' minds. The former will improve the efficiency and rate of utilization of plant capacity; the latter will stimulate consumption.

To achieve the goal of improving product quality, the author recommends: (1) improving sanitation practices and processing and handling systems, (2) maintaining the product at proper holding temperatures, and (3) instructing people engaged in the marketing channels of processed broilers on aspects dealing with handling systems and factors affecting product quality.

Promotional activities are recommended in order to extend consumption of broilers throughout the week and contribute to a smooth flow of broilers from farms to consumers.

Markets

Slight processing differences and traditional marketing practices have been indicated as the main factors contributing to local barriers which hinder the achievement of greater economies through large scale marketing organization. Therefore, the author's recommendation in this area is to eliminate these barriers through: (1) the establishment of national standards or norms of quality and grading systems, and (2) the rapid dissemination of market information - basically broiler prices.

The standardization of quality and grading systems should be carefully studied before forcing their use. Great attention should be devoted to the extra cost-extra return of these programs, as well as the marketing channels and quality loss during marketing.

Personnel

It has been indicated in several places throughout this study that lack of technological knowledge and managerial skill is found in some stages of the Venezuelan broiler industry. Therefore, it seems appropriate to organize seminars, workshops, and similar events through which people can improve their technological and managerial background and discuss their experiences and problems.

Research

Little or no research has been conducted in most stages of the Venezuelan broiler industry. Therefore, the author emphasizes the need for research, primarily in the production, processing, and marketing stages, and on the nature of scale, production density, and coordination effects on the overall performance of the industry.

Final Considerations

Guidelines for a workable performance of the Venezuelan broiler industry were presented throughout this chapter. These included the following recommendations:

1. The industry should allow the free action of the market mechanism, rather than adopt measures which interfere with such action.

2. Research on the nature of supply and demand trends should be conducted so that hatchery-supply flocks as well as chick and broiler production can be adjusted to what is estimated to be the market need for broilers during ensuing months.

3. The number of decision makers should be reduced through decisions linked to the integrated complex.

4. Decision centers should be shifted in the direction of the ultimate market, but special attention should be given to feed ingredient costs because of their great

influence on the overall performance of the industry.

5. Central collection and rapid presentation of data relating to broiler production and marketing should be considered an essential basis for production planning.

6. Coordination of vertical stages such as grow-out and processing should be improved through contracts or ownership in order to reduce short-run instability.

7. Contracts should be fair and foster efficiency so that growers can get an equitable share of the processed broiler price, according to their productive efforts and their contribution to the overall performance of the integrated complex.

8. Product quality should be improved in order to have a product with a longer shelf life and better appearance, which would allow a change in processing patterns and an improved product image in consumers' minds.

9. Promotional activities should be directed to extend consumption of broilers throughout the week and contribute to a smooth flow of broilers from farms to consumers.

10. So-called market barriers should be eliminated through the establishment of national standards of quality and grading systems and rapid dissemination of market prices.

11. Different events such as seminars and workshops, should be organized in order to help improve the

technological and managerial background of industry personnel.

12. Research should be directed primarily toward the production, processing, and marketing stages and on the nature of scale, production density, and coordination effects on the overall performance of the industry.

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APPENDIX

APPENDIX A

GLOSSARY

Market Structure

It refers to organizational characteristics of a market which influence relations of buyers and sellers and exert strategic influence upon price and the character of competition.

Market Conduct

It refers to a firm's policies and actions toward its market(s), its competitors, and its reactions to the policies and actions of its competitors.

Market Performance

It refers to the consequences for firms, industries, and consumers (society) flowing from the continuing inter-action of market structure and conduct, within specified markets and industries. Inter-action occurs through the policies and activities of firms. Firm policies directly relate to the power structure within each firm, as well as to exogeneous forces encountered by the firm.

It also can be defined as the appraisal of how much the economic results of an industry's market behavior deviates from the best possible contribution it could make to achieving society's goals.

Market Coordination

It refers to the process in an exchange system whereby producers, distributors and consumers interact to exchange relevant market information, establish conditions of exchange, and accomplish physical and legal transfer of economic goods.

Ready-to-Cook Plus Broiler

It is somewhat similar to the well-known ready-to-cook form, but feet, and part of the head are included. Feet are presented folded and inserted in the body cavity.