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**THE PHILIPPINE COCONUT INDUSTRY:  
GROWTH AND CHANGE, 1900-1965**

by

**George L. Hicks**

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CORRIGENDA

<u>Page</u>	<u>Table no.</u>	<u>Lines to be corrected</u>
37		The Mindanao ports, which had been of negligible importance in 1923, exported <u>45%</u> (instead of <u>35%</u> ) of the total by 1965.
A12		This, therefore, results in a relatively smaller figure than the census, since the latter includes all trees grown irrespective of the number <u>in any</u> (not <u>of the</u> ) geographical location.
51	18	<u>Copra Prices in Principal Exporting Countries</u> Column 6 - 1953 - <u>109</u> (instead of <u>121</u> ) Column 6 - 1954 - <u>103</u> (instead of <u>117</u> )
84	26B	<u>Exports of Coconut Products by Destination: 1949-1965</u> Footnote omitted: For Latin America <sup>b/</sup> <u>b/</u> Includes Colombia and Venezuela. For Others <sup>c/</sup> <u>c/</u> Includes the United Arab Republic and other countries.
124	33	<u>Coconut Products: Exports</u> Column 3 - 1965 - <u>643</u> (instead of <u>654</u> ) Column 4 - 1965 - <u>568.1</u> (instead of <u>577.8</u> ) Column 6 - 1965 - <u>1,120</u> (instead of <u>1,140</u> ) Column 7 - 1965 - <u>264.1</u> (instead of <u>268.8</u> )
126	33	Column 12 - 1965 - <u>270</u> (instead of <u>260</u> ) " 13 - 1965 - <u>49.0</u> ( " <u>47.2</u> ) " 14 - 1965 - <u>952.3</u> ( " <u>964.9</u> )
128	34	<u>Coconut Products: Value of Production</u> Column 2 - 1965 - <u>950.5</u> (instead of <u>964.9</u> ) " 4 - 1965 - <u>1,072.9</u> ( " <u>1,087.3</u> )

(Continued)

<u>Page</u>	<u>Table no.</u>	
143	37	<u>Coconut Oil: Prices and Exports and General Prices</u>
		Column 2 - 1965 - <u>\$15.89</u>
		Column 3 - 1965 - <u>61.65</u>
		Column 6 - 1965 - <u>199.6</u> (instead of <u>201.0</u> )
148	39	<u>Coconut Oil: Production, Exports, and Domestic Consumption</u>
		Column 2 - 1963 - <u>195.3</u> (instead of <u>317.7</u> )
		" " - 1964 - <u>229.4</u> (instead of <u>363.8</u> )
		" " - 1965 - <u>235.8</u> (instead of <u>343.2</u> )
		" 3 - 1964 - <u>134.4</u> (instead of <u>134.7</u> )
171	46	<u>Prices of Desiccated Coconut and Copra</u>
		Column 2 - 1965 - <u>643</u> (instead of <u>654</u> )
		" 4 - 1965 - <u>14.8%</u> (instead of <u>16.8%</u> )
A34	60	<u>Coconut Products: Prices</u>
		Column 3 - 1965 - <u>64.25</u> (instead of <u>65.38</u> )
		" 6 - 1965 - <u>1.12</u> (instead of <u>1.14</u> )
		" 7 - 1965 - <u>0.27</u> (instead of <u>0.26</u> )

**This is a preliminary working paper based on field work undertaken by the Development Planning Project. This material is presented in unfinished form and will eventually serve as part of a larger report on the results of the Project's work. It is submitted in this context and is not to be quoted.**

**Douglas S. Paauw, Director  
Center for Development Planning  
National Planning Association**

## **OUTLINE**

### **THE PHILIPPINE COCONUT INDUSTRY**

**Part I of this study presents the background of the industry. In addition to summarizing the major physical features of the industry, it includes a detailed description of the domestic and international policies that have applied to the industry.**

**Part II on Growth, Structural Change, and Productivity is a study of the determinants of the rates of growth and internal change. As both the conclusions and the reasoning are somewhat involved, it is not possible to summarize the results of this section.**

**Part III is a study of the determination of prices within the industry and the distribution of income by value added. The Philippine domestic prices for coconut products are found to be essentially determined by the world supply and demand for fats and oils in general.**

**Part IV uses the analytical framework of Parts II and III to evaluate past policies and to analyze the problems of the industry.**

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## INTRODUCTION

This is the first of a projected series of studies on the export sector of the Philippine economy. Monographs on sugar, logs and lumber, and mineral exports are in preparation. Building on the bricks of these individual industry studies, it is hoped eventually to be able to analyze the growth and development of the export sector and to use the results as part of a wider study seeking to explore the dynamics of the economy as a whole.

This paper is in every sense a first draft. Based largely on a study of statistical data, it lacks the "inside feel" that comes with close involvement in the industry. It is very much hoped that traders, manufacturers, government officials, and others closely associated with the industry will not hesitate to point out errors and omissions. To the extent that this paper does give the reader a satisfactory introductory account of the Philippine coconut industry the credit must go to Miss Victoria S. Esguerra who gathered all the basic data, constructed most of the tables, and was largely responsible for the writing of Part I. In addition, frequent discussions with Mr. Albert J. Nyberg of the U. P. College of Agriculture, Los Banos, have been very helpful.

The choice of questions asked is to a large extent dictated by the availability of data. At the outset it was hoped to study the impact of the

coconut industry on the development of the economy as a whole. But a study of the integration and interaction of the coconut industry with the economy demanded data that were not available. It was not feasible to study the short-run effect on savings and investment of changes in income in the coconut industry nor was it possible to explore the long-run consequences of the industry's production function, technology, and associated forward and backward "linkages." The hypotheses of the modern development economists such as Hirschman, Myint, and Baldwin, while stimulating, are often not subject to easy empirical testing. If this is a disappointment to the development economists, then at least they can be assured that economic theory is not irrelevant. The Marshallian approach to price determination, aided by the elements of imperfect competition, proves an indispensable source of tools to explain observed behavior patterns.

Part I of this paper is a descriptive survey of the industry which sets the scene for the more analytical sections that follow. Part II on Growth, Structural Change, and Productivity is a study of relative prices and their usefulness in explaining rates of growth.

Part III on Price Determination and Income Distribution does little more than open up this broad field, while Part IV attempts to draw

together a few of the dominant threads and indicate their possible relevance for policy formation and future growth paths. Appendix I discusses the sources and quality of coconut statistics. Appendix II presents basic, official statistical material. A bibliography of important sources is found in Appendix III.

Once again the preliminary nature of this report is stressed, and readers are cordially invited to express their disagreement.

**PART I**

**BACKGROUND TO THE INDUSTRY**

## THE PHILIPPINES AND THE WORLD COCONUT INDUSTRY

The Philippines is by far the world's largest producer of coconuts and coconut products, ranking first in the production and export of copra, coconut oil, copra meal/cake, and desiccated coconut. Table 1 compares the Philippines with the other principal coconut producing countries which include Indonesia, Ceylon, India, Malaysia, New Guinea, and Mozambique.

In the early 1920s, Indonesia was the leading copra exporting country of the world. However, in the whole postwar period the Philippines has dominated world coconut trade. By 1964, the Philippines produced 43% of the world's copra and supplied 52% of total world exports. Almost 50% of the world's coconut oil exports originated in the Philippines, and she played an equally dominant role in the exports of copra meal and desiccated coconut.

### COCONUTS IN THE PHILIPPINE ECONOMY

The importance of the Philippine coconut industry is also indicated by its role in the domestic economy. Almost one-third of the total cultivated farm land<sup>1</sup> is devoted to coconuts, and about one-quarter of

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<sup>1</sup> Census of Agriculture, 1960. The area planted to coconuts was 1,497 thousand hectares, while the total cultivated land is 5,580 thousand hectares. Coconuts, therefore, occupied 27% of the cultivated land.

the population is engaged in their production. Throughout the postwar period, coconut products have been the major export, leading both logs and lumber and sugar products. On the average, coconut product exports are approximately one-third of the total value of Philippine exports as shown in Table 2.<sup>2</sup> The contribution of coconut product exports to the gross national product has generally ranged from 3-5% in the postwar period.

### HISTORICAL BACKGROUND

The coconut is widely distributed throughout the Philippines, yet it is not indigenous to the country. The native home of the coconut palm is unknown, but it is believed that it must have originated somewhere in the Indo-Malayan Archipelago where a number of natural palm families abound. It is probable that the introduction of coconuts to the Philippines was made during the twelfth and thirteenth centuries when Indo-Malayan immigration was taking place in the southern part of the country. These immigrants must have brought the coconuts to these shores, for when Magellan arrived in 1521, he found the islands abundant with coconut trees.

<sup>2</sup>Philippine coconut product exports include copra, coconut oil, copra meal and cake, and desiccated coconut.

TABLE 1

PRODUCTION AND EXPORT OF COCONUT PRODUCTS BY SELECTED COUNTRIES: 1964  
(In thousand metric tons)

COUNTRIES	PRODUCTION Copra	EXPORTS			
		Copra	Coconut Oil	Meal/Cake	Desiccated Coconut
Philippines	1,428.4	856.3	233.1	191.8	68.6
Indonesia	n. a.	170.0		110.0	
Ceylon	315.0	59.0	119.4	18.0	50.6
India	264.0	*	*	25.6	
Malaysia	116.0	6.0	21.6	0.1	
New Guinea	91.3	61.6	25.0	14.2	
Mozambique	55.0	43.8	8.4	5.6	
World Total	3,350.0	1,457.9	479.7	453.0	119.2

\*Imports.

Source: FAO, Coconut Situation, Nos. 14 and 15, November, 1965, and May, 1966.

TABLE 2

VALUE OF PHILIPPINE EXPORTS OF COCONUT PRODUCTS  
(In million pesos, current prices)

Year	Value of Coconut Product Exports*	Value of Total Exports*	Gross National Product	% Value of Total Exports	% Value of GNP
1	2	3	4	5	6
1949	260.8	495.7	5,050	52.6	5.16
1950	356.8	662.1	5,130	53.9	6.95
1951	393.0	854.9	7,852	45.9	5.00
1952	242.9	691.4	7,925	35.1	3.06
1953	307.6	796.5	8,356	38.6	3.68
1954	327.8	801.0	8,454	40.9	3.87
1955	304.9	801.3	8,687	38.1	3.50
1956	351.9	906.4	9,440	38.8	3.72
1957	345.3	862.1	9,990	40.1	3.45
1958	368.0	985.5	10,684	37.3	3.44
1959	368.2	1,059.0	11,376	34.8	3.23
1960	445.1	1,401.0	11,988	31.8	3.71
1961	337.9	1,373.6	13,432	24.6	2.51
1962	592.1	1,951.6	14,972	30.3	3.95
1963	860.4	2,552.1	17,145	33.7	5.01
1964	865.0	2,604.5	18,787	33.2	4.60
1965	948.9	2,693.6	20,274	35.2	4.68

\*Dollar values of exports converted to pesos at prevailing official export rate.

Sources: Central Bank, Statistical Bulletin, December, 1965.  
Central Bank, Annual Report (for various years).

The importance of the coconut was recognized at this early stage (prior to Spanish rule) when the natives obtained part of their sustenance from the tree. Food, oil, wine, and vinegar were the useful home products of the nut. Earlier historical records show that exports of nuts to neighboring countries, although on a small scale, were undertaken in Chinese and Siamese junks before the coming of Magellan.

The Spaniards realized the advantages derived from the coconut trees both as a source of food for natives and by soldiers engaged in the galleon trade for the caulking of galleons and as a source of fiber for rigging. To meet these needs of the galleon trade, the Royal Spanish Government issued an edict compelling the people to plant coconut trees. This order was made in 1642 when Governor General Sebastian Hurtado de Corcuera ordered the village chiefs to plant 200 coconut trees and the "timawas" (serfs), 100 trees. Noncompliance with this order meant a fine of one thousand pesos (P1,000), or loss of office (for the village chiefs), or severe punishment and/or imprisonment in the galley.<sup>3</sup> This Decree, intended to solve the problem of supplies for the galleon trade, in effect began the planting of coconut trees in the Philippines on a large scale.

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<sup>3</sup> Emma Helen Blair and James Alexander Robertson, The Philippine Islands 1493-1898, Vol. 50, p. 211.

The census of 1903 records exports of copra and coconuts from 1854, but they are believed to consist almost entirely of nuts until the early 1890s. As a share of total exports, coconut products were less than one per cent from 1854 to 1890 and fluctuated from 2 to 7 per cent during the last decade of the century.<sup>4</sup> From 1899, copra exports grew rapidly in response to the growing demand of the French margarine industry. From 5 per cent of total exports in 1899, copra's share reached 22 per cent by 1909.<sup>5</sup>

The United States was insignificant as a market for coconut products before 1909, and it was not until 1916 that substantial quantities of oil and copra began to be exported there to meet the rapidly growing demand of the soap, margarine, and explosives industries. Since then, coconut product exports have been increasing continuously and, over the long run, improving their relative position. Contributing less than 5% in the 1890s, coconut products averaged 30% of total exports over the period 1919-29 and 37% during the years 1950-65.

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<sup>4</sup>Census of the Philippines, 1903, pp. 54-55.

<sup>5</sup>Statistical Bulletin, 1920, p. 180.

## GEOGRAPHICAL LOCATION

The coconut is grown in all the provinces of the country, but the most important regions are Southern Tagalog, Bicol, Eastern Visayas, and Southern and Western Mindanao. During the prewar period, a greater proportion of coconut production was concentrated in the Southern Tagalog area, particularly Laguna and Quezon. The latter was the leading coconut producing province in all respects, area planted, total number of trees--bearing and non-bearing--and total nuts gathered. The relative position of Quezon has declined significantly over the period although in 1960 it remained the leading coconut province.

The seven provinces, Laguna, Quezon, Camarines Sur, Leyte, Samar, Davao, and Cotabato, are the major coconut producing areas of the country. See Tables 3 and 4. In geographical terms, the location of these provinces provides a combination of factors which make their particular areas conducive to coconut production. These factors are moderate climate, fertile soil, and constant water supply.

The first requirement is a moderate temperature ranging between 22°C - 32°C (72°F - 92°F).<sup>6</sup> Studies made by Dr. Robert E. Huke reveal

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<sup>6</sup>There is some difference between authorities. See, for example, Uichanco, L. B., Philippine Agriculture, Vol. I (University of the Philippines, College of Agriculture, 1959), p. 208, where a temperature range of 25°C to 29°C is recommended.

TABLE 3

COCONUT AREA PLANTED BY MAJOR PROVINCES  
(In thousand hectares and in per cent of total area planted)

	<u>1939</u>	<u>1948</u>	<u>1960</u>
Philippines	1,051 - 100.00%	860 - 100.00%	1,497 - 100.00%
Luzon			
Quezon	149 - 14.19%	102 - 10.90%	141 - 9.46%
Laguna	50 - 4.74%	29 - 3.40%	39 - 2.61%
Camarines Sur	44 - 4.20%	43 - 4.97%	89 - 5.95%
Visayas			
Samar	76 - 7.22%	72 - 8.37%	143 - 9.59%
Leyte	64 - 6.05%	56 - 6.52%	47 - 5.26%
Mindanao			
Davao	38 - 3.56%	34 - 2.95%	95 - 6.36%
Cotabato	16 - 1.55%	15 - 1.77%	63 - 4.21%

Source: Census of Agriculture 1939, 1948, and 1960.  
Percentages calculated.

TABLE 4

TOTAL NUMBER OF COCONUT TREES BY MAJOR PROVINCES  
(In million trees and in per cent of total number of trees)

	<u>1939</u>	<u>1948</u>	<u>1960</u>
Philippines	139.2 - 100.00%	113.4 - 100.00%	195.5 - 100.00%
Luzon			
Quezon	25.3 - 18.15%	17.4 - 15.37%	24.0 - 12.27%
Laguna	7.2 - 5.15%	4.3 - 3.81%	5.3 - 2.70%
Camarines Sur	5.5 - 3.97%	5.8 - 5.13%	11.4 - 5.84%
Visayas			
Samar	10.2 - 7.32%	10.4 - 9.20%	19.6 - 10.03%
Leyte	8.0 - 5.76%	7.1 - 6.25%	13.3 - 5.00%
Mindanao			
Davao	4.1 - 2.96%	3.9 - 3.43%	12.4 - 6.33%
Cotabato	1.8 - 1.27%	1.5 - 1.34%	7.6 - 3.89%

Source: Census of Agriculture 1939, 1948, and 1960.  
Percentages calculated.

that areas with these temperature readings, such as Quezon, Samar, Cagayan de Oro, and Misamis, produce coconuts in large quantities.<sup>7</sup>

The coconut does not thrive in areas where there is a more extensive range of temperature.

Most of the major coconut producing provinces are located in the eastern portion of the country, except for those in Southern and Western Mindanao. In most coconut regions, therefore, temperature is moderated by the Pacific breeze and regulated by the mountains of Quezon, the Bicol region, Samar, and Leyte. Similarly, the Southern and Western Mindanao areas are protected by mountains in the north and open to sea breezes from the south, producing the uniform, yet mild, temperature necessary for coconut development.

Second, a fertile soil capable of holding circulating water is well suited for coconut groves. Although they thrive on sandy beaches and alluvial and sedimentary loams because of the constant water supply, they grow best on soil of volcanic origin such as those found in the Southern Tagalog and Bicol regions. Coconut trees are at their best below an

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<sup>7</sup>Robert E. Huke, Shadows on the Land (Manila: Bookmark, Inc., 1963), p. 269.

elevation of 1,500 feet, but some are grown at an altitude up to 2,000 feet. However, the yield declines as the altitude increases.<sup>8</sup>

Third, a constant, but not stagnant, water supply is needed since the coconut tree does not have tap roots to absorb water from the soil. An even distribution of rainfall is better than a climate marked by wet and dry seasons. Furthermore, annual total rainfall in inches should not be excessive. Areas where there is very heavy annual rainfall, such as Samar and Leyte, do not meet this requirement exactly; whereas, Quezon and Southern-Western Mindanao have a more ideal rainfall. A further climatic disadvantage of the Samar-Leyte region is that it is more subject to typhoons than most of the other coconut growing areas.

#### SHIFT IN GEOGRAPHICAL LOCATION

Through the years there has been a southward shift in the geographical distribution of coconut production. In terms of area planted, number of trees, and nuts gathered, Luzon has lost substantial ground to Mindanao, while the share of the Visayas has remained relatively unchanged. (See Tables 5 and 6.)

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<sup>8</sup>See Uichanco, L. B., op. cit., pp. 208-222, for the most definitive account of the agricultural aspects of coconut growing.

TABLE 5

AREA PLANTED AND NUMBER OF TREES BY REGIONS,  
1939 AND 1960  
(Per cent of total)

	<u>Area Planted</u>		<u>Total Number of Trees</u>	
	<u>1939</u>	<u>1960</u>	<u>1939</u>	<u>1960</u>
<u>Luzon</u>	<u>46.53</u>	<u>37.83</u>	<u>49.43</u>	<u>39.63</u>
Ilocos	.30	.17	.31	.20
Cagayan Valley	.40	.40	.42	.41
Central Luzon	1.29	.63	1.43	.62
Southern Tagalog	25.87	17.96	30.14	20.85
Bicol	18.67	18.67	17.13	17.55
<u>Visayas</u>	<u>29.95</u>	<u>29.12</u>	<u>29.62</u>	<u>29.23</u>
Eastern Visayas	20.13	21.15	20.00	21.34
Western Visayas	9.82	7.97	9.62	7.89
<u>Mindanao</u>	<u>23.44</u>	<u>33.05</u>	<u>20.91</u>	<u>31.14</u>
North & East Mindanao	11.60	14.18	10.65	13.21
South & West Mindanao	11.84	18.87	10.26	17.93

Source: Census of Agriculture 1939 and 1960.  
Percentages calculated from the aggregates of the provinces.

TABLE 6

NUMBER OF BEARING TREES AND NUTS GATHERED BY REGIONS,  
1939 AND 1960  
(Per cent of total)

	<u>Total Number of Bearing Trees</u>		<u>Total Nuts Gathered</u>	
	1939	1960	1939	1960
<u>Luzon</u>	<u>54.42</u>	<u>42.30</u>	<u>52.30</u>	<u>37.45</u>
Ilocos	.26	.17	.14	.12
Cagayan Valley	.37	.34	.16	.31
Central Luzon	1.53	.78	1.36	.67
Southern Tagalog	35.80	24.59	35.51	23.06
Bicol	16.46	16.42	15.13	13.29
<u>Visayas</u>	<u>27.98</u>	<u>29.50</u>	<u>24.51</u>	<u>27.83</u>
Eastern Visayas	18.50	21.29	16.76	20.56
Western Visayas	9.48	8.21	7.75	7.27
<u>Mindanao</u>	<u>22.33</u>	<u>28.13</u>	<u>23.36</u>	<u>35.09</u>
North & East Mindanao	14.72	13.58	13.32	16.59
South & West Mindanao	7.61	14.55	10.04	18.50

Source: Census of Agriculture 1939 and 1960.  
Percentages calculated from the aggregates of the  
provinces.

In 1939 Mindanao supplied 23% of the total nuts, but by 1960 this share had risen to 35%. The share of Mindanao almost certainly rose further in the years following 1960. The share of bearing trees in Mindanao is somewhat lower than its share of total trees due to a higher rate of new planting (Tables 5 and 6). In the years following 1960, a relatively greater number of trees in Mindanao must have reached bearing age.

A comparison of individual provinces in Luzon and Mindanao brings this contrast into even sharper relief. In Quezon and Laguna both area planted and number of trees have suffered a sharp absolute decline since 1939, while in Davao and Cotabato the area and number of trees increased more than three-fold between 1948 and 1960 (see Tables 3 and 4).

The changing geographical pattern of coconut production is not of recent origin. The southward shift was already obvious in the first decades of the century and was largely a result of a parallel southward shift in the distribution of population. The opening up of Mindanao has made available large areas of land which are ideally suited for coconut growing. Favorable climate and soils enable Mindanao to produce 35% of Philippine nut production from 28% of the bearing trees (Table 6). In addition, the Mindanao coconut is substantially larger than that typical of the rest of the country.

Apart from the "pull" factors of Mindanao, there are "push" factors which are driving coconuts out of Laguna and Quezon. Coconuts are essentially a frontier crop, easy to grow but with a low return per hectare. The increasing shortage of agricultural land in Luzon has therefore raised the opportunity cost of coconut land.

#### PRODUCTION OF COCONUTS

A coconut tree begins to yield after 6 to 8 years, and full production is reached in a 15-20 year period.<sup>9</sup> O. W. Barrett, formerly chief of the Division of Horticulture of the Philippine Bureau of Agriculture, claims that if a coconut tree is given proper cultivation it is capable of producing a maximum number of 100 nuts or more in a 9-year period. He pictures the rise to maximum yield per tree as follows:<sup>10</sup>

<u>Bearing Life</u>	<u>Nuts per Palm</u>
Fifth year	10
Sixth year	40
Seventh year	60
Eighth year	80
Ninth year	100

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<sup>9</sup>R. E. Huke, Shadows on the Land, p. 273.

<sup>10</sup>O. W. Barrett, Coconuts (Panama Pacific International Exposition, San Francisco, California, U.S.A., May 15, 1946) p. 11.

## **MEASURES OF PRODUCTIVITY**

There is no simple measure of the productivity of most tree crops. Coconuts are no exception. Because of the time taken to reach maturity, output per unit of area is influenced by the share of the total area which is currently bearing. The best measure of productivity is not realized output per hectare but the output per hectare which would result if all the trees were assumed to be bearing; i. e., the average yield per bearing tree times the number of trees per hectare. In practice, the number of nuts per bearing tree is a good measure of productivity for time series studies because of the reasonable stability over time in the number of trees per hectare.

## **FACTORS INFLUENCING PRODUCTIVITY**

To maximize nut production from the coconut trees, scientific cultivation is required which makes use of fertilizers, cover crops, and proper planting distances. Fertilizers give the trees resistance to disease and also help increase productive capacity, but their use has not been widely accepted. Cover crops are somewhat more widely used than fertilizers and are helpful because they reduce soil erosion, provide nitrogen for the soil if they are legumes, make the soil more porous and,

by shading the soil, help to keep it cool. The planting of catch crops, such as mung beans, peanuts, pineapples, vegetables, camote, and cassava, can sometimes improve the physical condition of the soil. The first two are good sources of nitrogenous substances, but some catch crops, such as corn, deplete the soil. Perhaps catch crops cover 15-20% of the area under coconuts and appear to be most important in Southern and Western Mindanao.

On plantations, the trees are planted in rows at an interval of 8 to 10 meters. One row is arranged so that the trees are mid-way between the trees of the two adjacent rows, thus producing a triangular effect. This even distribution of the trees makes for easier management and results in a higher yield.

The inverse relationship between planting distances and productivity is shown in Table 7. The closer the trees are planted (or the more trees per hectare), the lower the yield (or the fewer nuts per bearing tree). Most farmers, in an attempt to maximize the number of nuts gathered per hectare, plant the trees much too close together, causing both nuts per tree and per hectare to be below the maximum obtainable from the optimum planting distance. In contrast, plantations plant fewer trees per hectare and obtain both more nuts per tree and per hectare. The Bicol region is an exception to the rule because its yield is much lower in

TABLE 7

RELATIONSHIP BETWEEN PLANTING DISTANCES AND  
PRODUCTIVITY BY SELECTED REGIONS

	<u>Trees Per Hectare</u>	<u>Nuts Per Bearing Tree</u>
<u>Philippines</u>	<u>130</u>	<u>41</u>
Southern & Western Mindanao	124	52
Northern & Eastern Mindanao	121	50
Eastern Visayas	131	39
Southern Tagalog	151	38
Bicol	122	33

Source: Calculated from the 1960 Census of Agriculture.

spite of the larger distances. This is perhaps due to the "cadang-cadang" disease which is more prevalent in the Bicol region than in other parts of the Philippines.

The scientific factors, i. e., the use of fertilizers and cover crops and proper planting distances, coupled with the physical factors, soil, water, climate, determine the yield of coconut trees in a particular area.

The relationship among all these factors and their degree of influence on yield has been insufficiently studied and cannot be determined without additional field work.

## HARVESTING METHODS

Coconuts are harvested several times a year depending on the usual custom of the place and the productive yield of the tree. Most farmers usually harvest nuts at an interval of 45 days. In some places the harvest varies from 2 to 8 times a year. On well managed plantations, harvesting is done continuously throughout the year to make optimum use of labor resources.

The three methods of harvesting nuts are the following: a) by collecting the fallen nuts which have ripened on the trees, b) by climbing and picking the nuts, and c) by using a scythe-shaped knife attached to the end of a long bamboo pole.

The first method is expensive for the farmer since it takes time for the nuts to fall and sometimes the nuts split when they hit the ground. The advantage of this method is that it does ensure the use of fully ripe nuts. The second method requires the skill of a climber, and it is found to be impractical for large plantations. The third method is the most widely accepted way of harvesting, but this also requires considerable skill.

## SIZE OF FARM

Coconut farms are of two general types: smallholders and plantations. Smallholdings have always predominated, comprising around 99% of all coconut farms in the postwar period. There is a continuous graduation in the size of farms and a plantation is defined here, admittedly arbitrarily, as a farm in excess of 50 hectares.

In terms of area planted to coconuts, the plantations occupy a small portion of the entire coconut area. Of the 1.5 million hectares planted to coconuts, only 8%, or a total of 113 thousand hectares, are plantations while 92% of the cultivated area is under smallholdings.<sup>11</sup> The majority of these smallholdings average from one to four hectares per farm (Table 8) while the average size of farm with respect to area planted is between four to five hectares.

Old plantations exist side by side with smallholdings in the Southern Tagalog and Bicol areas, but at present new plantations are mostly found in the Mindanao area, primarily Davao, Cotabato, Lanao, and Zamboanga.

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<sup>11</sup>Calculated from the 1960 Census of Agriculture.

TABLE 8

SIZE OF FARM BY NUMBER AND AREA OF COCONUT FARMS  
(Per cent of total)

Size of Farm (In hectares)	1939		1948		1960	
	No.	%	No.	%	No.	%
Small (under 4)	80	35	73.0	32	65.0	32.2
Medium (over 4 and under 20)	21	45	26.0	36	32.0	51.0
Large (20 and above)	2	18	2.4	31	1.8	15.0

Source: Calculated from the Census of Agriculture 1939, 1948, and 1960.

For purposes of analysis, coconut farms, in terms of size, are most usefully divided into three groups: small, medium, and large. Small farms are those with an area of coconut cultivation of less than four hectares; medium, with from four to less than 20 hectares; and large, with 20 and more hectares.

From Table 8, it is apparent that the average size of coconut farms has been increasing from small to medium. Medium-sized farms are increasingly accounting for a rising percentage both of total farms and

area cultivated. Although a majority of the farms are still small, the medium-sized farms accounted for 32% of the total and 50% of the area planted by 1960.

#### TENURE OF FARM OPERATOR

With respect to the institutional structure, very little change has occurred since 1939 because the tenure system remains practically the same with the full owners still controlling more than half of production and the remainder divided between the part-owners and tenants, of whom share tenants are the most important (Table 9).

It is obvious from Table 9 that the average size of a coconut farm is not significantly correlated with the tenure system. The full owners own and cultivate more than half of the total coconut lands while the share of the tenants and part-owners are only approximately one-quarter and one-fifth, respectively. Other forms of tenure, notably the farm managers, have not gained in importance but have remained numerically insignificant.

TABLE 9

TENURE OF FARM OPERATOR BY NUMBER  
AND AREA OF COCONUT FARMS  
(Per cent of total)

Tenure of Farm Operator	1939		1948		1960	
	No.	%	No.	%	No.	%
Full Owners	61	62	68	68	56	59
Part Owners	17	12	12	8	18	15
Tenants	22	23	20	21	25	23
Others <sup>a</sup>	b	3	b	3	1	3

Source: Calculated from the Census of Agriculture 1939, 1948, and 1960.

<sup>a</sup>Includes farm managers.

<sup>b</sup>Less than 1%.

COCONUT PRODUCTS

A variety of products can be derived from the coconut tree. Most of the products have not been fully developed commercially, the exceptions being the four major export items: copra, coconut oil, desiccated coconut, and copra meal and cake. The minor products of the coconut

include home-consumed nuts and home-made oil used for cooking. The coir, or fiber, obtained from the husk is used for articles such as bags, rugs, doormats, and wallboards, while charcoal made from the coconut shell is useful as fuel or as carbon for gas masks and for other industrial purposes.

## COPRA

The mature coconut can be converted into either copra or desiccated coconut. About 94-95% of the nuts produced annually are processed rather crudely into copra. Copra is the dried meat of the nut from which the moisture content has been largely removed by heating or drying in the sun or in an open kiln dryer known locally as "tapahan." In rare cases a modern kiln dryer is used, but most copra is made by smoking the meat on a "tapahan."

Before the nut is heated, it is first husked and split and then carefully arranged to dry under the heat of the sun or on a "tapahan." Copra produced in a "tapahan" is usually sooty, scorched, or unevenly dried, but despite many statements to the contrary there is no clear evidence that its quality is inferior to that of sun-dried copra. Processing copra by the "tapahan" is preferred by farmers because it is a faster process and it is not subject to the threat of inclement weather.

According to a PHILCOA survey, 88% of the farmers use the native kiln dryer and only 10%, the sun-drying method. The remaining 2% use a combination of both methods, first sun-drying the copra and then heating it in the "tapahan."<sup>12</sup>

Copra contains 63% oil, 31% cake, and 6% water.<sup>13</sup> It is useful only as the source of coconut oil which is valuable for the production of many food and industrial products. In the Philippines, it is utilized for both edible and inedible purposes. It is mainly used for edible purposes in Europe, while it serves chiefly as an industrial ingredient in the manufacture of soap and synthetic detergents in the United States.

#### COCONUT OIL AND ITS BY-PRODUCTS

References to uses of copra mean the uses of oil extracted from copra and its by-product, copra meal and cake. Coconut oil is extracted from copra in the oil mills. From the first coconut oil mill established in Manila in 1906, there was a proliferation of 41 coconut oil factories before

<sup>12</sup> Philippine Coconut Administration (PHILCOA) unpublished report.

<sup>13</sup> Copra which contains 6% water or moisture (considered the "resecada" grade) produces the optimum amount of oil, while lesser oil is extracted if it has more moisture than 6%.

world war I. By 1900 there were only 9 oil millers<sup>14</sup> engaged in oil processing and exporting. The size, names, and nationality of these mills are shown in Table 10. Foreign enterprise dominates this sector, with the Chinese having the largest share.

In the oil mills, copra is made into coconut oil in the following way. First, the copra is graded and stored for about three weeks to dry out the remaining moisture. From the storehouse, it passes through the bin; then by a chain conveyor it moves over an electric magnet to remove the iron, nails, and other debris which might damage the machinery. Automatic weighing ensues; then the copra is ground into a coarse meal of about three-fourths inch in size. Pre-heated in vertical mills at 160° - 180°F to remove the moisture and shell, the pulped copra is fed into the expellers where the oil is extracted. The oil and meal are forced out into separate streams. The crude coconut oil is bleached, filtered, weighed, and pumped into big tanks for storage or shipping. Further refining turns this crude oil into edible cooking oil (or refined oil) which is exported and used domestically. In converting the powdered meal into cake "pellets,"

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<sup>14</sup>There are actually 10 oil millers, but two are sister companies and they will be considered as one in this case. The decline in the number of mills followed the collapse of the World War I boom. Only a few of the large mills survived the depression.

TABLE 10

## COCONUT OIL MILLERS AND EXPORTERS BY NATIONALITY AND VOLUME OF EXPORTS: 1965

<u>Nationality</u>	<u>No. of Millers/ Exporters</u>	<u>% of Total Exporters</u>	<u>Volume of Exports (long tons)</u>	<u>Value of Exports (F.O.B. - U.S.\$)</u>	<u>% of Total Volume Exported</u>
Chinese	4	44.5	144,078	\$42,814,837	61
American	3	33.3	61,551	18,048,029	26
Filipino	1	11.1	20,252	5,840,777	8
English	<u>1</u>	<u>11.1</u>	<u>11,720</u>	<u>3,358,970</u>	<u>5</u>
Total	9	100.0	237,601	\$70,062,613	100

Source: Standards Department, PHILCOA, 1965.

Percentages computed from the aggregates of individual oil millers/exporters.

TABLE 10

## COCONUT OIL MILLERS AND EXPORTERS BY NATIONALITY AND VOLUME OF EXPORTS: 1965 (Continued)

<u>List of Coconut Oil Millers: 1965</u>					
<u>Names of Firms</u>	<u>Nationality</u>	<u>Location</u>	<u>Qty. Exported (long tons)</u>	<u>Value of Exports (F.O.B. - U.S.\$)</u>	<u>% of Total Volume Exported</u>
1. Lu Do & Lu Ym Corp.	Chinese	Cebu City	104,583	\$31,003,430	44.0
2. Legaspi Oil Co., Inc.	American	Legaspi City	58,895	17,248,111	24.8
3. Imperial Vegetable Oil Co.	Chinese	Manila	21,696	6,461,015	9.1
4. Wee Kun Copra Industry Co., Inc.	Chinese	Zamboanga City	16,859	5,083,694	7.1
5. Phil. Refining Co., Inc.	English	Manila	11,720	3,358,970	4.9
6. *San Pablo Oil Mfg. Co.	Filipino	Sn. Pablo City	10,807	2,975,131	4.5
7. *Unifood Mfgs., Inc.	Filipino		9,445	2,865,646	4.0
8. Batjak, Inc.	American	Davao City	1,500	475,884	0.6
9. Procter & Gamble, PMC	American	Manila	1,156	324,033	0.5
10. Lucena Oil Factory	Chinese	Lucena City	940	266,698	0.4
	Total		237,601	\$70,062,613	100.0

\*Sister companies.

it is cooled with water, ground up, and weighed into bags for storage and later for export.

Coconut oil is valuable for the production of many food and industrial products such as cooking oil, margarine, soap, pomade, shampoo, etc. Its value in these uses is due to its chemical properties which differ from other fats and oils. It has less tendency to become rancid than other oils, and it has a high melting point (76°F) and contains more than 40% solids at 50°F. Having a consistency similar to butter, coconut oil is made into margarine and is useful for confectionery and bakery products.

Although coconut oil is facing strong competition from other fats and oils (notably soybean and cottonseed oils) as an ingredient for food, its lauric acid content, a property necessary to produce the lathering quality of soap and shampoo, has helped to sustain a high level of demand. However, palm kernel oil from Africa and babassu oil from Brazil, forming the lauric acid oil group with coconut oil, compete with it in its use as an ingredient for toiletry products. Coconut oil also contains glycerine, a substance used for the manufacture of explosives. This is one reason for the increased demand for coconut oil exports during the first World War.

The meal and cake are the final residue of copra. Highly nutritious, the cake "pellets" contain 20% protein and are excellent as cattle feed. While the cake "pellets" are all exported, the meal has found some local uses in the form of poultry feed and as an important ingredient in the manufacture of fertilizers. The structure of copra meal exporting is shown in Table 11.

#### DESICCATED COCONUT

Desiccated coconut is the shredded dried meat of the nut. The preparation of coconuts into grated (fine, medium, and coarse), shredded (fine, broken, and whole), or ribbon (broken and whole) desiccated coconut is as follows. From the fully matured nuts, the shell is broken by chiselling, being careful that the kernel is left whole and unbroken. The brown skin is shaved off. Broken into halves, the white meat is washed in running water and then passed into a bin to a disintegrator where a high speed rotating cutter transforms the clean meat into a shredded, wafered, or powdered meal. The product is placed in tray dryers where residual specks of processing are further removed. The desiccated coconut is then sifted and graded and weighed into bags ready for export.

TABLE 11

## COPRA MEAL AND CAKE EXPORTERS BY NATIONALITY AND VOLUME OF EXPORTS: 1965

<u>Nationality</u>	<u>Number of Exporters</u>	<u>% of Total Exporters</u>	<u>Volume of Exports (long tons)</u>	<u>Value of Exports (F.O.B. - U.S.\$)</u>	<u>% of Total Volume Exported</u>
Chinese	6	50.0	108,190	\$ 6,989,686	57
American	3	25.0	54,027	3,839,065	28
Filipino	2	16.6	8,950	621,476	5
English	<u>1</u>	<u>8.4</u>	<u>19,593</u>	<u>1,360,893</u>	<u>10</u>
Total	12	100.0	191,060	\$12,811,182	100

Source: Standards Department, PHILCOA, 1965.

Percentages computed from the aggregates of individual copra meal and cake exporters. (The major exporters are listed on the following page.)

TABLE 11

## COPRA MEAL AND CAKE EXPORTERS BY NATIONALITY AND VOLUME OF EXPORTS: 1965 (Continued)

<u>List of Major Copra Meal and Cake Exporters: 1965</u>					
<u>Names of Firms</u>	<u>Nationality</u>	<u>Location</u>	<u>Qty. Exported (long tons)</u>	<u>Value of Exports (F.O.B. - U.S.\$)</u>	<u>% of Total Volume Exported</u>
1. Lu Do and Lu Ym Corp.	Chinese	Cebu City	64,497	\$ 4,033,391	33.8
2. Legaspi Oil Co., Inc.	American	Legaspi City	31,798	2,306,257	16.6
3. Procter & Gamble, PMC	American	Manila	20,779	1,444,783	10.9
4. Phil. Refining Co., Inc.	English	Manila	19,593	1,360,893	10.2
5. Imperial Vegetable Oil Co.	Chinese	Manila	<u>12,550</u>	<u>892,572</u>	<u>6.6</u>
Total, five leading exporters			149,217	\$10,037,896	78.1

TABLE 12

## COCONUT DESICCATORS AND EXPORTERS BY NATIONALITY AND VOLUME OF EXPORTS: 1965

<u>Nationality</u>	<u>Number of Desiccators</u>	<u>% of Total Desiccators</u>	<u>Volume of Exports (long tons)</u>	<u>Value of Exports (F.O.B. - U.S.\$)</u>	<u>% of Total Volume Exported</u>
American	3	60	49,796	\$15,133,337	68
British	1	20	17,908	5,425,526	25
Chinese	<u>1</u>	<u>20</u>	<u>4,989</u>	<u>1,620,000</u>	<u>7</u>
Total	5	100	72,693	\$22,178,864	100

Source: Standards Department, PHILCOA, 1965.

Percentages computed from the aggregates of individual desiccators which are listed on the following page.

TABLE 12

## COCONUT DESICCATORS AND EXPORTERS BY NATIONALITY AND VOLUME OF EXPORTS: 1965 (Continued)

<u>Names of Desiccators</u>	<u>Nationality</u>	<u>Location</u>	<u>Qty. Exported (long tons)</u>	<u>Value of Exports (F.O.B. - U.S.\$)</u>	<u>% of Total Volume Exported</u>
1. Franklin Baker Co. of the Phil.	American	San Pablo, Laguna	22,133	\$ 6,126,582	30.4
2. Peter Paul Phil. Corporation	American	Candelaria, Quezon	14,834	4,918,246	20.4
3. Blue Bar Coconut Products Co.	American	Lusacan, Quezon	12,829	4,088,509	17.6
4. Red V Coconut Products, Ltd.	British	Cebu	9,496	2,816,801	13.1
Red V Coconut Products, Ltd.		Lucena, Quezon	8,412	2,608,725	11.6
5. Sun Ripe Coconut Products	Chinese	Magdalena, Laguna	<u>4,989</u>	<u>1,620,001</u>	<u>6.9</u>
Total			72,693	\$22,178,864	100.0

Desiccated coconut is used for candies, chocolate bars, cakes, cookies, pies, and other confectioneries. This product is all exported, mostly to the United States. The structure and location of the industry is shown in Table 12. The industry is concentrated in the Laguna and Quezon areas and is dominated by U. S. firms.

#### MARKETING OF COPRA

Most copra passes through several levels of marketing before it finally reaches the oil mill or exporter. The only major exception to this is some of the larger estates who deliver their copra directly to the final buyer.

Although the system of marketing coconuts and copra varies considerably from place to place, broad patterns can be discerned. There are several ways by which the farmer disposes of his crop. He may sell the nuts, which can be done either by contract selling of unharvested nuts or by selling the husked nuts. Or, alternatively, he will sell processed copra. When the farmer sells his nuts on the basis of a contract with the buyer, it is the latter who harvests the nuts and processes the copra which is generally sold to factory agents or exporters.

In most cases, however, the farmer processes his own copra which he then sells to the barrio (village) buyer.<sup>15</sup> In general, there is considerable competition among buyers, but the competition often takes the form not so much of competitive price offers, but of competitive extension of credit to the farmer.<sup>16</sup>

If the farmer is located in a somewhat remote area and is unable to transport and sell his copra in an established barrio market, he will usually have one regular buyer who collects the copra. The general or, at least, common rule in each case is contract selling, involving the extension of credit and advance agreement on prices. The complexity and variety of buyer-seller relationships, involving in some cases the advancing of goods rather than money, makes it difficult to analyze the operation of market forces in this sector of the industry. At any one moment of time different seller-buyer relationships will result in very different prices; but involving, as it does, different risk factors and implicit rates of interest, no simple conclusions can be drawn. What is significant, however, is that when a very large number of farm prices are

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<sup>15</sup>In some cases the farmer sells directly to the town buyer. For a description of copra marketing, see Z. Cernohous, "The Marketing of Agricultural Products in the Philippines," The Philippine Economic Journal, Vol. V, No. 1, pp. 73-76.

<sup>16</sup>This arrangement for extending credit, or prepayment for purchases, extends throughout the whole marketing system. The exporters or factories finance their immediate suppliers who, in turn, extend credit to their suppliers.

observed and averaged, the results correlate very closely with urban wholesale prices. This result is analyzed in Part III, where it is found to be compatible with competition rather than monopsony. Yet it is still true that at this level the industry, although generally competitive, is far from a model of perfect competition. Buyers' power is exercised in a number of ways--in some places at the expense of isolated sellers and often as a result of weighing and pricing. At the barrio and town level most copra, whether high or low grade, is sold on the "buen corriente" basis, with a lower price than that for "resecada," or first class copra.

One widespread misconception is that marketing at the village level is largely in the hands of non-indigenous Filipinos. According to a PHILCOA estimate, of the 10,000 barrio copra buyers, 87% are native-born Filipinos (see Table 17).

The barrio buyers resell the copra to dealers in towns who, in turn, sell it to the agents of either exporters or factories. If, however, oil-using factories or loading ports are located in the town itself, the town buyer will ordinarily sell directly to the factories or exporters.

At the town level of marketing there are about four thousand registered buyers, but, in addition, there are a substantial but unknown number of unregistered buyers who have avoided the payment of the registration fee. As can be seen from Table 13, even at the town level of marketing, native-born Filipinos are numerically dominant.

TABLE 13

REGISTERED COPRA BUYERS AND DEALERS  
AT THE TOWN LEVEL; 1960-1961

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	<u>Number</u>	<u>Percentage</u>
Filipinos (native born)	2,716	65.0
Chinese (Nationals and naturalized Filipinos)	1,350	34.0
Spaniards	10	0.7
Americans	<u>2</u>	<u>0.3</u>
TOTAL	4,078	100.0

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Source: Economic Research Department, PHILCOA, Problems of the Philippine Copra and Coconut Oil--Their Setting, Measures, and Possible Solutions (March 25, 1964).

It is often said that the system of marketing is extremely inefficient, as evidenced by the large numbers of traders involved and the number of hands through which it passes. It is not immediately obvious that the estimated 14,000 traders is excessively large in view of the million farmers who sell nuts and copra.<sup>17</sup> Multiple handling of the copra can hardly be avoided, given the generally underdeveloped transportation and storage facilities and geographical dispersion of production.

#### INTER-ISLAND TRADE AND REGIONAL EXPORTING OF COPRA

From the towns and minor ports the copra moves to the oil factories and major loading ports. The major inter-island flows of copra are from the hinterland into Cebu, Manila, Zamboanga, and Davao. The substantial flow of copra into Manila is not primarily for re-export but to meet the demands of the Manila oil extractors. Cebu imports a considerable quantity for its large oil mill but much is for re-exports. Cebu imports copra from the neighboring Visayan islands, especially Bohol and Leyte, and there is also a very large flow to Cebu from the northern shores of Mindanao. Cebu is the leading copra port of the Philippines and

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<sup>17</sup>The 1960 Census of Agriculture reports 440,275 coconut farms; i. e., farms where coconuts occupy more than 50% of the utilized farm area. The total number of farms reporting coconut production was 1,015,247.

it is engaged mostly in the transshipment of copra, which comes in significant quantities from as far away as Legaspi in the north and Davao in the south.<sup>18</sup>

The ten major copra exporting ports in their order of importance are Cebu, Davao, Tacloban, Siain (Quezon), Zamboanga, Cagayan de Oro, Legaspi, Tabaco (Albay), Jose Panganiban (Camarines Norte), and Manila. Siain is the port for much of Quezon; Legaspi, Tobaco, and Jose Panganiban serve the Bicol region; and southern and eastern Samar ship through Tacloban.

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<sup>18</sup> See Frederic L. Wernstedt, The Role and Importance of Philippine Inter-island Shipping and Trade (Ithaca, New York: Cornell University 1957, Cornell University, Southeast Asia Program, Data Paper No. 26) p. 43. The copra movement into Cebu is a complex pattern of flows that defies brief description. The best account of domestic trade is found in the Stanford Research Institute, An Economic Analysis of Philippine Domestic Transportation (Stanford, California, 1957) Vol. II, The Demand for Transportation Commodity Flows and Passenger Movements. For Cebu trade see p. 139. According to this source, 90% of the copra shipped to Cebu originated in the eastern Visayas and northern and eastern Mindanao. Within this region alone, copra was shipped to Cebu from 91 shipping points. A large part of the tonnage reaching Cebu is shipped among the 91 ports before arriving at Cebu. This is evident, for example, in the large excess of shipments over production from Bohol and Leyte.

The export of copra by region as well as port of loading, 1965, is shown in Table 14. It is striking that most copra exports originate in Cebu and Mindanao, reflecting not so much the geographical distribution but, rather, the concentration of the copra manufacturing sector (oil and desiccating factories) in Luzon and the role of Cebu as a transshipment port.

As the distribution of coconut production has shown a long-run trend to shift southward, so has the pattern of regional exports. In fact, the trend has been so marked with the rise of Cebu and Mindanao that Manila has been almost completely by-passed. As can be seen from Table 15, the port of Manila once dominated the country's copra exports. By 1923 its share in the copra trade, while still dominant, had declined significantly. Unfortunately data are not available for the period 1924-1940 but it is likely that the share of Cebu and the Mindanao ports increased steadily. A comparison of Tables 14 and 15 shows that, between 1923 and 1965, not only did Manila decline to insignificance as a copra exporting port but even Cebu's share suffered a large decline. The Mindanao ports, which had been of negligible importance in 1923, exported 35% of the total by 1965. The rise of Mindanao was due partly to production shifts but, more importantly, to the development of port facilities.

TABLE 14

## COPRA EXPORTED BY REGION AND PORTS OF LOADING: 1965

<u>Region and Open Ports</u>	<u>Quantity (long tons)</u>	<u>Per cent of Total</u>
Area 1 - Manila	14,160.00	1.67
Area 2 - Southern Tagalog (Siain, Quezon)	56,701.00	6.70
Area 3 - Bicol Region (Legaspi, Jose Panganiban, Tabaco)	96,127.00	11.36
Area 4 - Eastern Visayas (Tacloban)	90,799.89	10.73
Area 5 - Western Visayas (Cebu)	202,795.51	23.98
Area 6 - Northern Mindanao (Cagayan de Oro)	134,500.00	15.90
Area 7 - Southern Mindanao (Davao and Zamboanga)	<u>250,564.44</u>	<u>29.62</u>
TOTAL	845,647.84	100.00

Source: Standards Department, PHILCOA, 1965.  
Percentages calculated.

TABLE 15

COPRA ACCUMULATED AND EXPORTED AT CUSTOMS PORTS,  
BY PERCENTAGES: 1914-1923\*

Year	Manila	Cebu	Iloilo	Zamboanga	Jolo
1914	71.5	23.1	1.7	2.8	1.8
1915	74.0	21.4	2.1	1.8	.5
1916	82.4	15.1	1.8	1.3	.3
1917	60.3	36.2	1.1	1.2	.1
1918	73.7	25.3	1.4	.6	-
1919	75.0	22.0	2.0	.6	.3
1920	74.4	24.9	-	.5	.2
1921	59.0	37.3	1.3	2.8	.7
1922	64.4	29.6	2.3	3.1	.5
1923	57.4	35.8	2.6	3.9	.5

Source: E. D. Gothwaite, Trade in Philippine Copra and Coconut Oil  
(Department of Commerce: Washington, D. C., Government  
Printing Office, 1925) p. 28.

\*Expressed as percentage of the total Philippine production.

## **COPRA EXPORT MARKETING**

Whereas the domestic marketing of copra is in the hands of thousands of traders, exporting of copra in the mid-sixties is dominated by a few large firms. The top four copra exporters handle 70% of the business; the first ten, 87%. Copra exporters by size, name, and nationality can be seen from Table 16. It is only at this level of marketing that the alien role becomes dominant.

### **SUMMARY: THE MARKETING STRUCTURE OF COCONUT PRODUCTS**

Table 17 summarizes the data on the number, size, and nationality of farms and firms engaged in producing and exporting coconut products.

In terms of number of firms and scale of operation, the coconut industry falls into three distinct sectors: farming, domestic marketing, and manufacturing-exporting. This marketing pyramid, so narrow at the apex and broad at the base, may be a factor helping to strengthen the hand of buyers at each level since at any particular point the sellers greatly outnumber the buyers.

TABLE 16

## COPRA EXPORTERS BY NATIONALITY AND VOLUME OF EXPORTS: 1965

<u>Nationality</u>	<u>Number of Exporters</u>	<u>% of Total Exporters</u>	<u>Volume of Exports (long tons)</u>	<u>Value of Exports (F.O.B. - U.S.\$)</u>	<u>% of Total Volume Exported</u>
Chinese	14	54	374,414	\$ 72,405,447	44
American	4	15	273,430	54,111,834	32
Filipino	6	23	160,014	30,837,135	19
Spanish	<u>2</u>	<u>8</u>	<u>37,790</u>	<u>7,530,155</u>	<u>5</u>
Total	26	100	845,648	\$164,844,573	100

Source: Standards Department, PHILCOA, 1965.

Percentages calculated from the aggregates of individual copra exporters (the major ones are listed on the following page).

TABLE 16

## COPRA EXPORTERS BY NATIONALITY AND VOLUME OF EXPORTS: 1965 (Continued)

<u>List of Major Copra Exporters: 1965</u>					
<u>Names of Firms</u>	<u>Nationality</u>	<u>Location</u>	<u>Qty. Exported (long tons)</u>	<u>Value of Exports (F.O.B. - U.S.\$)</u>	<u>% of Total Volume Exported</u>
1. International Copra Exporter Corporation	Chinese	Manila	230,780	\$ 43,886,544	27.3
2. Procter & Gamble, PMC	American	Makati, Rizal	150,752	29,885,652	17.8
3. Granexport Corporation	American	Makati, Rizal	117,828	23,334,502	13.9
4. Southern Products Importer & Exporter Corporation	Filipino	Manila	88,710	16,971,895	10.5
5. Federal Marketing Corp.	Chinese	Manila	38,084	7,445,872	4.5
6. AIC Dev. Corporation	Filipino	Manila	37,094	7,223,371	4.4
7. Visayan Coconut Growers Assn.	Filipino	Cebu City	19,230	3,753,625	2.3
8. Aboitiz & Co., Inc.	Spanish	Cebu City	19,130	3,779,175	2.3
9. Cia Gral. de Tabacos de Filipinas	Spanish	Manila	18,660	3,750,980	2.2
10. East Visayas Products	Chinese	Cebu City	18,250	3,530,050	2.2
Total, ten leading exporters			738,518	\$143,561,666	87.4

TABLE 17

PRODUCERS, BUYERS, AND EXPORTERS OF COCONUT PRODUCTS,  
NUMBER, SIZE, AND NATIONALITY, 1965  
(Quantity in long tons)  
(Percentages of total)

Producers/ Traders (1)	Total All Nationalities		Filipino (native born)			
	Number of Firms (2)	Qty. of Exports (3)	Number of Firms (4)	% (5)	Qty. of Exports (6)	% (7)
Farmers <sup>a</sup>	233,086		233,085	100%		
Barrio Buyers <sup>a</sup>	10,000		8,700	87%		
Town Buyers <sup>b</sup>	4,078		2,716	65%		
Copra Exporters	26	845,648	6	23%	160,014	19%
Oil Millers/ Exporters	9	237,601	1	11%	20,252	8%
Coconut Desiccators	5	72,691				
Copra Meal/Cake Exporters	12	191,060	2	16.6%	8,950	5%
Coconut Shell Charcoal Exporters	4		4	100%		

Source: Economic Research and Standards Departments, PHILCOA, 1965 (unpublished report). Percentages computed from aggregates of individual exporters or producers.

<sup>a</sup>Approximate figures from the Economic Research Department, PHILCOA. The 1960 Census reports 440,275 coconut farms.

<sup>b</sup>1960-61 Registered Copra Buyers.

TABLE 17  
(Continued)

Producers/ Traders	Chinese (Nationals and Nat. Filipinos)				American			
	Number of Firms	%	Qty. of Exports	%	Number of Firms	%	Qty. of Exports	%
	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Farmers <sup>a</sup>	0	0			0	0		
Barrio Buyers <sup>a</sup>	1,300	13%						
Town Buyers <sup>b</sup>	1,350	34%			2	3%		
Copra Exporters	14	54%	374,414	44%	4	15%	273,430	32%
Oil Millers/Exporters	4	44.5%	144,078	61%	3	33.5%	61,551	26%
Coconut Dicers	1	20%	4,989	7%	3	60%	49,796	68%
Copra Meal/Cake Exporters	6		108,190	57%	3	25%	54,027	28%
Coconut Shell Charcoal Exporters	0	0			0	0		

TABLE 17  
(Continued)

Producers/ Traders	Other Aliens				All Aliens (Combined)			
	Number of Firms (16)	% (17)	Qty. of Exports (18)	% (19)	Number of Firms (20)	% (21)	Qty. of Exports (22)	% (23)
Farmers <sup>a</sup>	0	0		0	0			
Barrio Buyers <sup>a</sup>					1,300	13%		
Town Buyers <sup>b</sup>	10	7%			1,362	35%		
Copra Exporters	2	8%	37,790	5%	20	77%	685,634	81%
Oil Millers/ Exporters	1	11%	11,720	5%	8	89%	217,349	92%
Coconut Desiccators	1	20%	17,908	25%	5	100%	72,691	100%
Copra Meal/Cake Exporters	1	8.4%	19,593	10%	10	83.4%	182,110	95%
Coconut Shell Charcoal Exporters	0	0			0	0		

## **DOMESTIC POLICIES: THE ATTEMPT TO PROMOTE THE DEVELOPMENT OF THE COCONUT INDUSTRY**

By and large, the coconut industry has developed without the help or hindrance of policy makers. There has been no attempt to control quantity as with sugar, to influence price as with rice, to subsidize as with tobacco, or to stabilize prices as with abaca. The coconut industry has been left alone, and over a period of half a century its average rate of growth has far outstripped that of these other commodities.

There have been some policies, however, and they are not without interest--not so much for what they achieved but rather for the light they throw on what the policy makers apparently see as key problems. A detailed evaluation of these policies and a discussion of alternatives is left to Part IV. The intention of this section is to describe the major policies and the problems as seen by the policy makers and to use some simple, indirect criteria to judge the overall effectiveness of some of these policies.

The establishment of the Philippine Coconut Administration in 1954<sup>19</sup> ushered in the period of policy making for the coconut industry.

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<sup>19</sup>Established June 17, 1954, under Republic Act No. 1145.

A government corporation, the PHILCOA, was given wide authority to recommend legislation and implement policies covering all economic aspects of the coconut industry.

PHILCOA first turned its attention to what it described as "unfair trading practices" in copra.<sup>20</sup> Claiming the lack of any objective method of measuring the quality of copra enabled buyers to cheat producers, the PHILCOA pressed successfully for the passing of the Moisture Meter Law in 1955.<sup>21</sup> This Act provided that "for every first domestic purchase of a particular lot of copra and in every place where each such purchase is made the buyers are hereby required...to use moisture meters...for determining the percentage of moisture content in copra."<sup>22</sup> The actual

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<sup>20</sup>The full flavor of what was meant by "unfair trading practices" is conveyed by a PHILCOA pamphlet on moisture meters, written for copra producers: "In the past many buyers of your copra cheated you. You produced good copra but the copra buyer did not pay you well. He said your copra did not deserve a good price.... Today all that is changed. You should not be cheated by the copra buyer any longer." Fair Copra Trading with Moisture Meters, February, 1958, p. 2.

<sup>21</sup>Republic Act No. 1365, June 18, 1955.

<sup>22</sup>The Act prescribed heavy penalties for violations. For unlawful use, tampering with the meter, fraud in picking samples, and failure to issue a certificate, the Act prescribed: "imprisonment for not less than one month nor more than six months and a fine of not less than one thousand pesos nor more than five thousand pesos.... If the violator is an alien, he will suffer additional punishment of deportation." Fair Copra Trading with Moisture Meters, February, 1958, pp. 6-11.

moisture content was to determine the premium or discount paid for the copra. If, for example, the moisture content was only 3%, then a 2% premium was to be paid on the resecada price of copra. A moisture content in excess of 5% was penalized with a progressive deduction.

By legislating for the sale of copra on the resecada basis rather than the usual corriente basis, it was hoped to raise the overall level of prices received by the producers. By compelling the payment of a premium for copra with a low moisture content, it was hoped to give an incentive for the production of higher grade copra.

By 1964-65 the number of moisture meters registered with PHILCOA was 1,570. To the extent that these moisture meters were genuinely and effectively used it was almost wholly at the higher levels of marketing. Used by the oil mills, exporters, and large traders, the moisture meter was hardly ever used by the producer at the point of first sale.

Control over the quality of copra exported was given to PHILCOA in 1956. Through inspection and the application of specified standards and the prohibition of exports which did not meet the standards, it was

hoped to raise the quality of copra exports.<sup>23</sup> Throughout the whole period 1956-66, copra which did not meet the PHILCOA standards could not legally be exported.

The Coconut Industrialization Law of 1955 aimed to "elevate the coconut industry to the agro-industrial level, with the ultimate aim of diversifying production coupled with the proper utilization of its by-products." According to this law, ₱30 million was to be appropriated out of the proceeds of the sale of bonds. Loans were then to be made available to persons, associations, or corporations engaged in coconut industrialization. By 1965 only ₱1.9 million had been released under this law.<sup>24</sup> Advances had been made to the Laguna Coconut By-Products, the Quezon Coconut Central, and for the development of the Hiller Machine.<sup>25</sup> The success of these projects was not conspicuous.

The Coconut Financing Fund which was established in 1959 had as its aim the provision of financial assistance for coconut cooperatives

<sup>23</sup>There are standards with respect to the content of oil, moisture, fatty acid, and extraneous matter. See PHILCOA Circular No. 2, 1956, for details of copra export standardization regulations.

<sup>24</sup>PHILCOA, Annual Report 1965-66, pp. 1-6.

<sup>25</sup>A machine that extracts oil directly from fresh nuts.

and coconut producers.<sup>26</sup> Under this law a P30 million fund was to have been created, of which P10 million was to be made available after one year and P5 million each year thereafter. By 1965 only P5 million had been released.

After the Coconut Financing Fund of 1959 no major act was passed until the Cooperatives Law of 1965.<sup>27</sup> The aim of this act was the creation of cooperatives for production, processing, and trading of coconut products. The organization and supervision of these "agro-industrial" cooperatives was to be under the direct jurisdiction of PHILCOA.<sup>28</sup>

In 1966 PHILCOA announced a four-year development plan for the industry with the primary object of establishment and operation of coconut seedling nurseries. The object of the nurseries is to provide free seedlings of high quality to replace overage trees.<sup>29</sup> Second priority in the PHILCOA development plan is the control of cadang-cadang and other

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<sup>26</sup>Republic Act No. 2282, June 19, 1959.

<sup>27</sup>Republic Act No. 4403, June 19, 1965.

<sup>28</sup>It was hoped that through the establishment of a cooperative of Philippine traders (COBONTER) the producer would be able to sell directly to consumers or exporters, thus replacing the middlemen.

<sup>29</sup>PHILCOA seedling nurseries were originally established in 1959. Between 1959-66, 31 nurseries distributed 216,700 seedlings. See PHILCOA Annual Report 1965-66.

pests and diseases. Other plans include the establishment of a defibering plant, a baling plant, and a machine shop.

Over the decade 1955-65, PHILCOA policies concentrated on what was seen as five main problem areas. These were the low quality of copra, the problem of "middleman exploitation," the need to "industrialize" the industry, develop by-product utilization, and combat the cadang-cadang disease.

The policies advocated by the private coconut organizations and their view of the industry's problems do not differ substantially from those of PHILCOA. The United Coconut Association of the Philippines (UCAP) places considerable emphasis on the reduction in the number of middlemen.<sup>30</sup> Other private interests stress the need for "industrialization," typified, for example, by the proposed P22.4 million coconut chemical plant to be financed by the National Investment Development Corporation (a subsidiary of the Philippine National Bank). The objective of this plant is to "integrate the manufacture of the whole nut through the establishment of integrated coconut manufacturing

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<sup>30</sup>The UCAP is the central private coconut organization representing the Philippine Coconut Producers Federation, the Philippine Copra Exporters Association, the Philippine Coconut Oil Producers Association, the Philippine Federation of Coir Producers and Exporters, the Coconut Shell Charcoal Producers Association, the Philippine Coconut Desiccators Association, and the PHILCOA as the representative of the government.

complexes designed to produce products like coconut oil, coconut based chemicals (fatty acids, fatty alcohols and their derivatives, such as plasticizers, detergents, surfactants, etc.).<sup>31</sup> The proposed plant will also have considerable emphasis on by-product utilization. In addition to chemicals derived from coconut oil, there are plans to manufacture activated coconut charcoal, coir mattings, carpets, and other products.

In the international field, the Philippine government has lobbied for the reduction or elimination of European and U. S. tariff and taxes on coconut oil. There have also been numerous proposals and attempts to cooperate with the other major copra exporters with the objective of raising the world copra price. The concrete manifestation of this policy is the Philippine-Indonesian Coconut Commission. Although the Commission has not made any agreement with Indonesia, it sent a delegation to Djakarta in August, 1966, for the purpose of discussing with its Indonesian counterpart "plans on how to control the price of copra, supplied by the two countries to as much as 90 per cent [sic] but which is virtually controlled by the cartels in the United States and Europe."<sup>32</sup>

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<sup>31</sup>The Economic Monitor, April 10, 1967, p. 9.

<sup>32</sup>The Sunday Times (Manila), Djakarta Mission, August 21, 1966, p. 10A.

A detailed critique of these policies is not possible until the analytical framework of Parts II and III has been developed. However, it is possible at this stage to give a rough evaluation of the policies that were directed towards raising the quality of copra for export. If the quality of Philippine copra had improved significantly, then the relative prices received for her copra, compared with that of other copra producing countries, would almost certainly have improved.<sup>33</sup> Table 18 compares copra prices in a number of countries. It is very clear that between 1956 and 1961 there was a substantial improvement in the relative price of Philippine copra. In 1956 the price of Philippine copra averaged 92% of the price received by competing countries. By 1959 this average had risen to 112% and by 1961, 144%. In 1962 the quality of Philippine exported copra apparently declined drastically and did not recover in subsequent years. The improvement in the quality of copra, beginning in 1956, coincided with the beginning of control and inspection of copra exported. The preliminary conclusion is that this control succeeded in raising the quality of copra until 1961. The improvement was not, however, sustained, and the quality of Philippine copra over the years 1963-65 was not noticeably better than that of a decade earlier.

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<sup>33</sup>The logical possibility exists that the quality of other countries' copra changed significantly. A slightly more serious objection arises from the sale of copra by some countries under contract at predetermined prices. Even here, predictably enough, the long-run price follows world prices.

TABLE 18

COPRA PRICES IN PRINCIPAL EXPORTING COUNTRIES  
 In U. S. dollar equivalent, per metric ton)\*

Year	Philippines	Malaysia	Relative Prices (2/3)	Ceylon	Relative Prices (2/5)	French Polynesia	Relative Prices (2/7)	New Guinea	Relative Prices (2/9)
1	2	3	4	5	6	7	8	9	10
1953	183	203	90	168	<del>121</del> <sup>109</sup>	-	-	-	-
1954	154	176	88	50	<del>117</del> <sup>103</sup>	-	-	-	-
1955	136	152	89	121	112	166	82	142	96
1956	130	148	88	132	98	161	81	128	102
1957	142	148	96	151	94	150	95	118	120
1958	188	183	103	173	109	175	107	139	135
1959	233	222	105	197	118	207	112	202	115
1960	200	179	112	157	127	172	116	176	114
1961	191	142	134	117	163	137	139	137	139
1962	135	150	90	124	109	135	100	134	101
1963	151	161	94	140	108	152	99	153	99
1964	171	-	-	139	123	152	112	162	105
1965	180	-	-	169	106	174	103	193	93

Source: FAO Coconut Situation, Nos. 14 and 15, November, 1965, and May, 1966.

\*All prices are for approximately the same grade.

## INTERNATIONAL POLICIES, TARIFFS, TAXES, QUOTAS, AND THEIR SIGNIFICANCE FOR PHILIPPINE COCONUT PRODUCTS

International trade in coconut products has been subject to government tariffs, taxes, and controls since the first World War. Of the four major coconut export products, it is only coconut oil which has been subjected more or less generally and continuously to substantial duties. Copra, as it is an unprocessed raw material, has generally been tariff-free in most countries (see Table 19). Both copra meal and cake and desiccated coconut have been subject to tariffs in the United States but not in other markets.

### COCONUT OIL

#### A. The U. S. Tariff (Basic Duty)

Coconut oil production began on a commercial scale in the Philippines with the establishment of the first modern coconut oil mill in Manila in 1906. The oil industry expanded when the first World War broke out because of the increasing demand for the industrial uses of this oil, particularly for explosives. Moreover, coconut oil was given preference as a result of the shortage of bottoms for the shipping of the more bulky copra. From exports of 5,000 tons in 1913, there was an increase to

TABLE 19  
IMPORT DUTIES ON COPRA AND COCONUT OIL  
(Percentages Ad Valorem)

Countries	Copra	Coconut Oil		
		Basic	Crude <sup>a</sup>	Refined <sup>b</sup>
EEC	free	5 - 12 <sup>c</sup>	3	8
Belgium-Luxemburg	free		5	10
West Germany	free		5	10
France	9 <sup>d</sup>		13.5	
Italy	-	18 - 25		
Denmark	free	4 - 5		
Finland	74	6 - 97		
Norway	free	-		
Switzerland	0.1	1 - 18		
United Kingdom	10	15 <sup>f</sup>		
United States	free <sup>e</sup>	7 <sup>f</sup>		
Canada	free	10 - 17		
Australia	free	12		
Japan	free	10		

Sources: "Trade in Agricultural Commodities in the U. N. Development Decade," Part III, U. N. Conference on Trade and Development, IV, 1964.

"Implications of the ECM for International Trade in Copra and Coconut Oil," PHILCOA, April 23, 1963.

<sup>a</sup>Used for industrial purposes.

<sup>b</sup>Used for edible purposes.

<sup>c</sup>Subject to change in 1968--5-15% ad valorem (5% for crude, 10-15% for refined).

<sup>d</sup>Eliminated in 1959.

<sup>e</sup>Subject to tariff imposition from 1962 for product of non-Philippine origin.

<sup>f</sup>Equivalent to the one-cent per pound duty; the Philippines pays only the duty outside of the tariff quota until 1974.

140,000 tons by 1919. But the steady rise of exports did not continue as a result of the end of the war and the ensuing world depression. To save the industry from complete collapse, the Emergency Act of 1921 was passed in the United States giving tariff protection to Philippine coconut oil. A duty of 2.67 cents per pound, later reduced to two cents per pound under the U. S. Tariff Act of 1922, was placed on coconut oil. The duty gave protection to Philippine coconut oil since it did not apply to the Philippine product by virtue of the U. S. - Philippine trade agreement, based on the Payne-Aldrich Bill of 1909 and the Philippine Tariff Law of the same year.

Under the U. S. Internal Revenue Act of 1934, the two cent duty was levied on Philippine oil exports in excess of 200,000 long tons. This tariff was not paid as oil exports did not exceed 200,000 tons in the pre-war period. In accordance with the United States-Philippine Trade Agreement of 1946, this duty was reduced to one cent per pound for the Philippine product in excess of the tariff quota. Under the GATT Agreement of 1948, the United States reduced the rate to one cent per pound on products of GATT member countries. This Agreement did not affect the tariff paid on Philippine oil as she was not a GATT signatory and the one cent per pound rate already applied to her product by virtue of the 1946 agreement.

**B. The Processing (Excise) Tax**

The three cent per pound processing tax on coconut oil was imposed under the U. S. Revenue Act of 1934. Intended to protect the dairy, livestock, and farming interests of the United States, the tax was imposed on the first domestic processing of all types of oils of foreign origin which competed with the domestically produced soybean, cottonseed, tallow, lard, butter, and other fats and oils. All these domestically produced oils in the United States faced direct competition with coconut oil as an ingredient in the manufacture of margarine and soap.

The three cent per pound tax was, in principle, not applicable to the Philippines from 1934 to 1946 since the taxes collected on Philippine coconut oil were returned to the Philippine government for the improvement of the industry.<sup>34</sup>

From 1946 to 1956 the revenue from this tax was not returned to the Philippine government on the grounds that the refund was intended only to prepare the country to adjust economically in preparation for independence and that the tax was really internal in nature; i. e., an excise tax and not a tariff.

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<sup>34</sup>\$150 million was refunded from 1934 to 1946 but, despite the original intention of the Act, the money was not used for the improvement of the coconut industry.

This tax was not at first abolished but suspended consecutively on a three-year basis, from 1957 to June 30, 1960 (U. S. PL 85-235), then until June 30, 1963 (U. S. PL 86-432), and finally until June 30, 1966 (U. S. PL 87-859). The stated intention of this suspension was to study the probable effects of the abolition of this tax. Finally, a bill abolishing the three cent duty on coconut oil crushed in the Philippines and elsewhere was signed by the U. S. President on April 13, 1966 (U. S. PL 89-388).

The three cent per pound processing tax was eliminated to the advantage not only of the Philippines but also of the United States, for the latter stood to gain more by the import of cheap coconut oil than she stood to lose as a result of competition with her own oil industry. By the 1950s, imported coconut oil was virtually no threat to the U. S. farming and oil interests. The United States had become the world's largest exporter of oils, and imported coconut oil was only a small part of the total oil used. In addition, there had been a large decline in the use of coconut oil for food uses such as margarine. Coconut oil was being used more in detergents and other industrial uses where it competed with a wide range of non-edible oils such as petroleum derivatives.

It was definitely to the advantage of the U. S. industrial consumers of coconut oil, such as Lever Brothers and Procter and Gamble, to have a cheap supply of high-grade Philippine oil. Copra deteriorates during

transit, and the import of oil rather than copra is therefore preferred. Another advantage to the United States of importing oil rather than copra is that there is no by-product of copra meal and cake to compete with the surplus by-products of U. S. oilseeds.

In passing, it should be mentioned that the three cent per pound processing tax was converted to a customs duty in 1962 on the grounds that this tax was really external in nature since copra, palm kernel, palm nut kernel, are of foreign origin and are not produced in the United States. But the conversion into a customs duty under the U. S. Customs Simplification Act in 1962 was of no consequence, for the three cent per pound tax was suspended from 1957 until its total repeal in 1966.

#### C. The Additional Tax on Coconut Oil

In addition to the three cent processing tax imposed in 1934, an excise tax of two cents per pound was levied on coconut oil processed in all countries other than the Philippines. Designed to protect U. S. dairy interests and Philippine producers, the tax was never imposed on the Philippine product.

As with the three cent per pound tax, the two-cent tax was converted into a customs duty in 1962, but it was not applied to the Philippine product by virtue of the trade agreement with the United States.

This preferential treatment for the Philippine product will no longer apply after July 3, 1974, or the termination of the Laurel-Langley Trade Agreement. The substantial protection afforded by this tax was the source of the strong competitive position of Philippine oil in the U. S. market.

D. The Tariff Quota and the One-Cent Duty

The duty-free quota of 200,000 long tons under the U. S. Internal Revenue Act of 1934 was continued under the U. S. -Philippine Trade Agreement of 1946 and the revised agreement of 1955. Under the terms of the revised agreement, coconut oil entering the United States is subject to a progressively decreasing tariff quota until 1974. The schedule of this tariff quota is shown in Table 20. Exports in excess of this tariff are subject to a one cent per pound tariff.

From 1955 to 1962 the tariff quota was never filled. Then, in 1963, the quota of 160,000 long tons was filled by November 1 of that same year. The 1964 quota was filled in August 1964, the 1965 quota by May 1965, and the 1966 quota by March 1966.

In 1963 the duty on exports in excess of the quota was not collected, because the excess quantity was impounded and released the following year and applied to the 1964 duty-free quota. If the duty on the exports of oil in excess of the quota is not paid, the duty-free quota for a

TABLE 20  
TARIFF QUOTA ON PHILIPPINE COCONUT OIL UNDER  
THE LAUREL-LANGLEY AGREEMENT

Period	Percentage Quota	Amount Duty Free
1946 - 1954	Basic - 100%	200,000 long tons
1955 - 1958	95%	190,000 long tons
1959 - 1961	90%	180,000 long tons
1962 - 1964	80%	160,000 long tons
1965 - 1967	60%	120,000 long tons
1968 - 1970	40%	80,000 long tons
1971 - 1973	20%	40,000 long tons
1974	nil	nil

Source: Urbano A. Zafra, Philippine Economic Handbook  
(Washington, D. C.), 1960.

given year is then partially filled by the previous year's excess exports and charged against the following year's tariff quota, as shown by the 1963-1964 example:<sup>35</sup>

1963 - Exports: 182,728 long tons

Quota: 160,000 long tons - filled in May, 1963

22,728 long tons - balance to be charged against following year (1964)

1964 - Balance of 1963: 22,728 long tons

Exports within  
quota: 137,272 long tons

160,000 long tons - filled in August, 1964.

A problem is posed by this tariff quota since individual importers in the different ports of entry of the United States do not realize when the tariff quota will be filled and when they are supposed to pay the one cent per pound duty in excess of the quota of the amount of \$22.40 per long ton.

Until the expiration of the Laurel-Langley Agreement, Philippine coconut oil in the U. S. market is subject only to the one-cent tax for exports in excess of the quota. After 1974, however, Philippine oil will be subject to the full rate of four cents per pound; i. e., the basic duty of two cents plus the additional duty of two cents (see Table 21).

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<sup>35</sup>Amelito R. Mutuc, The Philippine-American Coconut Oil Trade Problem. (Manila, R. P., 1964) p. 6.

### E. The Tariff of the European Common Market

Another possible threat to the further expansion of the coconut oil industry is the European Common Market's proposal to apply 5% ad valorem taxes on crude coconut oil and between 10-15% tax on refined oil. These rates are higher than the present ones in Germany, the Netherlands, and Belgium but lower than those in France and Italy (Table 19). This proposal is intended to protect and subsidize the dairy industry of the member countries which have a surplus production of butter fats. The volume of imports of coconut products will not be restricted. This proposal also includes the fixing of prices independently of world prices. It is expected to take effect not later than July 1, 1968.

### COPRA

In most countries copra is not subject to tariffs, but an important exception has been the United States, where the three cents per pound processing tax on coconut oil was associated with a corresponding tax on copra of 1.87 cents per pound and the additional two cents per pound tax was linked with a corresponding copra tax of 1.25 cents,<sup>36</sup> or a

<sup>36</sup>This is based on an extraction rate of oil from copra of 0.62.

total of 3.12 cents per pound. As Philippine oil was subject only to the three-cent tax, she paid the corresponding copra tax of 1.87 cents per pound. The suspension of the processing tax on oil in 1957 was accompanied by a parallel suspension of the copra tax. With the end of the Laurel-Langley Agreement, the Philippines will be paying the 1.25-cent per pound tax, the copra equivalent of the two-cent tariff on coconut oil (see Table 21).

#### COPRA MEAL AND CAKE

Although copra meal and cake was subjected to a duty of three-tenths cent per pound in the United States before the war, the Philippines did not pay the duty because of the free trade agreement with the United States dating from 1909. The full duty was levied only in 1946 when the Philippines became independent.

The duty was later reduced to one-fifth cent per pound in compliance with the GATT Agreement of 1948. The Philippines, being a non-signatory to the GATT, did not benefit from this tariff reduction. Nevertheless, the Philippines is not in an adverse position because almost all her copra cake is exported to Europe, where no tariffs are levied. Very little is exported to the United States, where there is little demand due to a surplus of by-products from her own oilseed production. Under

TABLE 21

## COPRA EQUIVALENT OF THE U. S. PROCESSING TAXES

<u>Tax or Tariff</u>	<u>Philippine Origin</u>		<u>GATT</u> (Philippines not member) Reduced rates		<u>Full Rate</u>	
	<u>Oil</u>	<u>Copra</u>	<u>Oil</u>	<u>Copra</u>	<u>Oil</u>	<u>Copra</u>
(1) Basic Duty (Tariff)	1 <sup>a</sup>		1		2	
(2) 3-cent Processing Tax (converted into duty in 1962)	3	(1.87) <sup>b</sup>	3	1.87	3	1.87
(3) Additional Duty	0		2 <sup>c</sup>	1.25 <sup>c</sup>	2 <sup>c</sup>	1.25
	4	(1.87)	6	3.12	7	3.12
Less (2) above permanently, repealed by U. S. P.L. 89-388	3	(1.87)	3	1.87	3	1.87
	1 <sup>a</sup>		3	1.25	4	1.25

Source: Analysis of Atty. Orlando L. Tiongco, Legal Counselor, Granexport Corporation, Makati, Rizal.

<sup>a</sup>Applicable only to quantity in excess of duty-free quota.

<sup>b</sup>Copra equivalent of the three-cent processing tax.

<sup>c</sup>1955 Revised Trade Agreement. The U. S. undertook to maintain the 2-cent per pound preferential duty in the processing tax between Philippine coconut oil and non-Philippine oil. The proposed differential on copra is 1.25 cents per pound. The GATT reduced only the basic duty.

the proposed policy of the European Common Market, copra and copra meal and cake will be admitted free of duty within this economic region.

Under the Laurel-Langley Agreement, there is a corresponding increase in duties on all Philippine exports, including copra meal and cake from 1955 until 1974 when the 100% rate of three-tenths cent per pound will be imposed. The schedule of this progressive increase in the duty is found on Table 22.

#### DESICCATED COCONUT

The passage of the Fordney-McCumber Tariff Act of 1922 encouraged the establishment of the desiccated coconut industry of the Philippines. The act increased the duty on shredded coconut meal from foreign countries, from two cents to three and one-half cents per pound, thus affording substantial protection to the Philippine product. Prior to 1922, Ceylon was the sole desiccator supplying the United States. As a result of this tax imposed on the Ceylonese product, the Philippine desiccated coconut industry expanded and was soon supplying practically all the desiccated coconut imports of the United States, as can be seen in Table 23.

The Philippines did not pay the two cents per pound tariff on desiccated coconut until 1946. In 1948 under the GATT Agreement, the

TABLE 22  
TARIFF DUTY ON COPRA CAKE  
(Per pound)

<u>Period</u>	<u>Philippines</u>	<u>Non-Philippine Source</u>
1956 - 1958	.05 x .3 cents	Full duty .3 cents
1959 - 1961	.10 x .3 cents	"
1962 - 1964	.20 x .3 cents	"
1965 - 1967	.40 x .3 cents	"
1968 - 1970	.60 x .3 cents	"
1971 - 1973	.80 x .3 cents	"
1974 - on	full duty .3 cents	"

Application example of the above:  
Duties to be paid per 1,000 pounds of copra cake.

<u>Period</u>	<u>Philippines</u>	<u>Non-Philippine Source</u>
1956 - 1958	\$0.15	\$3.00
1959 - 1961	0.30	"
1962 - 1964	0.60	"
1965 - 1967	1.20	"
1968 - 1970	1.80	"
1971 - 1973	2.40	"
1974 - on	3.00	"

Source of rates of customs duties: U. S. Tariff Act of 1930, as amended  
(Trade and Commerce Branch).

TABLE 23

PERCENTAGE OF U. S. DESICCATED COCONUT IMPORTS ORIGINATING  
IN THE PHILIPPINES, 1926-36

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1926 - 99.8%	1931 - 99.9%
1927 - 99.7%	1932 - 99.9%
1928 - 99.9%	1933 - 99.9%
1929 - 99.9%	1934 - 100.0%
1930 - 99.9%	1935 - 99.6%
	1936 - 98.9%

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Source: Brief Submitted by the Philippine Desiccated Coconut Industry Before the Joint Preparatory Committee on Philippine Affairs, September, 1937.

two cent per pound duty was reduced to 1.75 cents per pound. The Philippines, although not a GATT member, received the full benefit of the reduction. Like the progressively increasing duty on copra meal and cake, however, the duty on Philippine desiccated coconut is also being progressively raised until it reaches its full duty of 1.75 cents per pound in 1974 (see Table 24). There is no intention to impose a duty on this product in the European Common Market.

#### SUMMARY

Table 25 summarizes the tariffs, taxes, and quotas applying to Philippine coconut products. The dominant feature is the long history of preferential treatment in the U. S. market which is scheduled to be phased out by 1974.

#### COCONUT EXPORTS BY DESTINATION

The growth of coconut exports coincided with the turn of the century but was the result less of the transfer of sovereignty to the United States than to the growth of European demand for coconut oil. Used at first for the manufacture of quality soaps and candles, coconut oil became increasingly used for the manufacture of lard and margarine.

TABLE 24  
TARIFF DUTY ON DESICCATED COCONUT  
(Per pound)

<u>Period</u>	<u>Philippines</u>	<u>Favored Nation Duty</u>	<u>No Agreement Nation Full Duty</u>
1956-1958	.05 x 1.75 cents	1.75 cents	3.50 cents
1959-1961	.10 x 1.75 cents	"	"
1962-1964	.20 x 1.75 cents	"	"
1965-1967	.40 x 1.75 cents	"	"
1968-1970	.60 x 1.75 cents	"	"
1971-1973	.80 x 1.75 cents	"	"
1974-on	Full duty of 1.75 cents	"	"

Application example of the above:  
Duties to be paid per 1,000 pounds of desiccated coconut.

<u>Period</u>	<u>Philippines</u>	<u>Favored Nation</u>	<u>No Agreement Nation</u>
1956-1958	\$0.875	\$17.50	\$35.00
1959-1961	1.75	"	"
1962-1964	3.50	"	"
1965-1967	7.00	"	"
1968-1970	10.50	"	"
1971-1973	14.00	"	"
1974-on	17.50	"	"

Source of rates of customs duties: U. S. Tariff Act of 1930, as  
amended (Trade and Commerce Branch)

TABLE 25

SUMMARY OF TARIFFS, TAXES AND QUOTAS IMPOSED  
ON PHILIPPINE COCONUT PRODUCTS

Year	Acts or Official Documents	Coconut Oil	
		Basic Duty (Tariff)	Processing (excise) Tax (on all fats and oils)
1921	U.S. Emergency Act of 1921	2.67 cents/lb. <sup>a</sup>	
1922	U.S. Tariff Act of 1922 Fordney McCumber Tariff Act	Reduced to two cents per pound <sup>a</sup>	
1930	U.S. Tariff Act of 1930	Continued imposition <sup>a</sup>	
1934	U.S. Internal Revenue Act of 1934 Tydings-McDuffie Law		cents per pound (Refund of tax to Philippine Government)
1946	U.S.-Philippine Trade Agreement	Reduced to one cent/lb. outside of tariff quota	
1948	GATT Agreement (U.S.)	Reduced to one cent /lb. <sup>b</sup>	
1954	Internal Revenue Code of 1954 (Section 4511)		Carry over of three cents per pound
1955	Revised U.S.-Philippine Trade Agreement (Laurel-Langley Agreement)		
1956	Laurel-Langley Agreement		
1957	U.S. PL 85-235 (Sec. 3)		Beginning of suspension
1959	Laurel-Langley Agreement		
1960	U.S. PL 86-432		Continued suspension

TABLE 25

SUMMARY OF TARIFFS, TAXES AND QUOTAS IMPOSED  
ON PHILIPPINE COCONUT PRODUCTS (Continued)

Year	Acts or Official Documents	Coconut Oil	
		Basic Duty (Tariff)	Processing (excise) Tax (on all fats and oils)
1962	Laurel-Langley Agreement EEC Proposal U.S. Customs Simplification Act		Converted into customs duty <sup>c</sup>
1963	U.S. PL 87-859		Continued suspension
1965	Laurel-Langley Agreement		
1966	U.S. PL 89-388 (April 13, 1966)		Elimination of tax (Customs duty not effective)
1968	Laurel-Langley Agreement EEC Proposal		
1971	Laurel-Langley Agreement		
1974	Termination of Laurel- Langley Agreement	Imposition of 2 cents/lb. basic duty	None

TABLE 25

SUMMARY OF TARIFFS, TAXES AND QUOTAS IMPOSED  
ON PHILIPPINE COCONUT PRODUCTS (Continued)

Year	Acts or Official Documents	Coconut Oil	
		Additional Tax (Coconut oil only)	Tariff Quota
1921	U.S. Emergency Act of 1921		
1922	U.S. Tariff Act of 1922 Fordney McCumber Tariff Act		
1930	U.S. Tariff Act of 1930		
1934	U.S. Internal Revenue Act of 1934 Tydings-McDuffie Law	2 cents per pound <sup>d</sup>	200,000 long tons
1946	U.S.-Philippine Trade Agreement		Basic quota of 200,000 long tons; one cent duty in excess of quota
1948	GATT Agreement (U.S.)		
1954	Internal Revenue Code of 1954 (Section 4511)	Continued imposition of this add. excise tax <sup>d</sup>	End of 100% basic quota (200,000 long tons)
1955	Revised U.S.-Philippine Trade Agreement (Laurel-Langley Agreement)		Start of progressive reduction of quota 95% or 190,000 long tons
1956	Laurel-Langley Agreement		
1957	U.S. PL 85-235 (Sec. 3)		
1959	Laurel-Langley Agreement		90% or 180,000 long tons
1960	U. S. PL 86-432		

TABLE 25

SUMMARY OF TARIFFS, TAXES AND QUOTAS IMPOSED  
ON PHILIPPINE COCONUT PRODUCTS (Continued)

Year	Acts or Official Documents	Coconut Oil	
		Additional Tax (Coconut oil only)	Tariff Quota
1962	Laurel-Langley Agreement EEC Proposal U.S. Customs Simplification Act	Converted into customs duty <sup>d</sup>	80% or 160,000 long tons
1963	U.S. PL 87-859		
1965	Laurel-Langley Agreement		60% or 120,000 long tons
1966	U.S. PL 89-388 (April 13, 1966)		
1968	Laurel-Langley Agreement EEC Proposal		40% or 80,000 long tons
1971	Laurel-Langley Agreement		20% or 40,000 long tons
1974	Termination of Laurel-Langley Agreement	Imposition of two cents per lb. tax	None

TABLE 25

SUMMARY OF TARIFFS, TAXES AND QUOTAS IMPOSED  
ON PHILIPPINE COCONUT PRODUCTS (Continued)

Year	Acts or Official Documents	Coconut Oil EEC Proposal	Copra Processing Tax (Copra equivalent)
1921	U.S. Emergency Act of 1921		
1922	U.S. Tariff Act of 1922 Fordney McCumber Tariff Act		
1930	U.S. Tariff Act of 1930		
1934	U.S. Internal Revenue Act of 1934 Tydings-McDuffie Law		(1.87 cents/lb. and 1.25 cents/lb.) <sup>e</sup>
1946	U.S.-Philippine Trade Agreement		
1948	GATT Agreement (U.S.)		
1954	Internal Revenue Code of 1954 (Section 4511)		
1955	Revised U.S.-Philippine Trade Agreement (Laurel-Langley Agreement)		
1956	Laurel-Langley Agreement		
1957	U.S. PL 85-235 (Sec. 3)		
1959	Laurel-Langley Agreement		
1960	U.S. PL 86-432		
1962	Laurel-Langley Agreement EEC Proposal		
	U.S. Customs Simplification Act		Present rate of 5-12% a.v.; 3% for industrial use; 8% for edible use

TABLE 25

SUMMARY OF TARIFFS, TAXES AND QUOTAS IMPOSED  
ON PHILIPPINE COCONUT PRODUCTS (Continued)

Year	Acts or Official Documents	Coconut Oil EEC Proposal	Copra Processing Tax (Copra equivalent)
1963	U.S. PL 87-859		
1965	Laurel-Langley Agreement		
1966	U.S. PL 89-388 (April 13, 1966)		
1968	Laurel-Langley Agreement EEC Proposal	Beginning of increased a.v. duties; 5% for crude; 10-15% for refined.	
1971	Laurel-Langley Agreement		
1974	Termination of Laurel- Langley Agreement		

TABLE 25

SUMMARY OF TARIFFS, TAXES AND QUOTAS IMPOSED  
ON PHILIPPINE COCONUT PRODUCTS (Continued)

Year	Acts or Official Documents	Copra Tariff	Copra Meal & Cake Tariff
1921	U.S. Emergency Act of 1921		
1922	U.S. Tariff Act of 1922 Fordney McCumber Tariff Act		
1930	U.S. Tariff Act of 1930		
1934	U.S. Internal Revenue Act of 1934 Tydings-McDuffie Law		3/10 cents per lb. <sup>h</sup>
1946	U.S.-Philippine Trade Agreement		3/10 cents per lb.
1948	GATT Agreement (U.S.)		Continued imposition of 3/10 cents per pound <sup>i</sup>
1954	Internal Revenue Code of 1954 (Section 4511)		
1955	Revised U.S.-Philippine Trade Agreement (Laurel-Langley Agreement)		
1956	Laurel-Langley Agreement		.05 x .3 cents/lb.
1957	U.S. PL 85-235 (Sec. 3)		
1959	Laurel-Langley Agreement		.10 x .3 cents/lb.
1960	U.S. PL 86-432		
1962	Laurel-Langley Agreement EEC Proposal U.S. Customs Simplification Act		.20 x .3 cents/lb.  Processing tax of 1.87 <sup>f</sup> and 1.25 converted into customs duty

TABLE 25

SUMMARY OF TARIFFS, TAXES AND QUOTAS IMPOSED  
ON PHILIPPINE COCONUT PRODUCTS (Continued)

Year	Acts or Official Documents	Copra Tariff	Copra Meal & Cake Tariff
1963	U.S. PL 87-859		
1965	Laurel-Langley Agreement		.40 x .3 cents/lb.
1966	U.S. PL 89-388 (April 13, 1966)	Free <sup>g</sup>	
1968	Laurel-Langley Agreement EEC Proposal		.60 x .3 cents/lb.
1971	Laurel-Langley Agreement		.80 x .3 cents/lb.
1974	Termination of Laurel-Langley Agreement	1.25 cents per pound	Full duty of .3 cents per pound

TABLE 25  
SUMMARY OF TARIFFS, TAXES AND QUOTAS IMPOSED  
ON PHILIPPINE COCONUT PRODUCTS (Continued)

Year	Acts or Official Documents	<u>Desiccated Coconut Tariff</u>
1921	U.S. Emergency Act of 1921	
1922	U.S. Tariff Act of 1922 Fordney McCumber Tariff Act	2 cents per pound (increased to 3 1/2 cents per pound for Ceylon products) <sup>j</sup>
1930	U.S. Tariff Act of 1930	
1934	U.S. Internal Revenue Act of 1934 Tydings-McDuffie Law	
1946	U.S.-Philippine Trade Agreement	2 cents per pound
1948	GATT Agreement (U.S.)	Reduced to 1 3/4 cents per pound
1954	Internal Revenue Code of 1954 (Section 4511)	
1955	Revised U.S.-Philippine Trade Agreement (Laurel-Langley Agreement)	
1956	Laurel-Langley Agreement	.05 x 1.75 cents per pound
1957	U.S. PL 85-235 (Sec. 3)	
1959	Laurel-Langley Agreement	.10 x 1.75 cents per pound
1960	U.S. PL 86-432	
1962	Laurel-Langley Agreement EEC Proposal U.S. Customs Simplification Act	.20 x 1.75 cents per pound

TABLE 25

SUMMARY OF TARIFFS, TAXES AND QUOTAS IMPOSED  
ON PHILIPPINE COCONUT PRODUCTS (Continued)

Year	Acts or Official Documents	<u>Desiccated Coconut Tariff</u>
1963	U.S. PL 87-859	
1965	Laurel-Langley Agreement	.40 x 1.75 cents per pound
1966	U.S. PL 89-388 (April 13, 1966)	
1968	Laurel-Langley Agreement EEC Proposal	.60 x 1.75 cents per pound
1971	Laurel-Langley Agreement	.80 x 1.75 cents per pound
1974	Termination of Laurel- Langley Agreement	Full duty of 1.75 cents per pound

TABLE 25

SOURCES AND FOOTNOTES

R. P., Constitution of the Philippines (Incorporates the Laurel-Langley Agreement), 5th Edition (Manila: Central Book Supply, Inc.), 1964.

"Discriminatory Tariffs on Coconut Oil--Trade Barriers," PHILCOA Report, Economic Research Department, PHILCOA, 1966.

Frank H. Golay, The Revised United States-Philippine Trade Agreement of 1955, Data Paper No. 23 (Ithaca, New York: Cornell University), 1956.

Amelito R. Mutuc, The Philippine-American Coconut Oil Trade Problem. (In connection with the Philippine Request for the Removal of the U. S. Duty and Processing Tax on Coconut Oil), (Manila, Republic of the Philippines), June 20, 1964.

U. N. GATT, International Trade 1957-1958--The Contracting Parties to the GATT (Geneva, July 1959), pp. 229-230.

U. N., "Trade in Agricultural Commodities in the U. N. Development Decade," Part III, UN Conference on Trade and Development, IV, 1964.

"U. S. Excise Tax on Coconut Oil," Economic Research Department, PHILCOA, May 24, 1962.

U.S., Congress, Senate, Committee on Finance, Tariff Treatment of Copra, Palm Nuts, and Palm Nut Kernels, and the Oils Crushed Therefrom. Prepared by Chairman Russell B. Long, Report No. 1009, Calendar No. 983, 89th Congress, 2nd Session, 1966.

U.S., Tariff Commission, Fats, Oils, and Oil-Bearing Materials in the United States (Washington: U.S. Government Printing Office), December 15, 1941.

U.S., Tariff Commission, Report to the Congress on Certain Vegetable Oils, Whole Oil, and Copra, Report No. 41, 2nd Series (Washington: U.S. Government Printing Office), 1932.

U.S., Tariff Commission, U.S.-Philippine Trade with Special Reference to the Philippine Independence Act and Other Recent Legislation. I. (Washington: U.S. Government Printing Office), January 1937.

U.S., Tariff Commission, Tariff Schedules of the U.S. Annotated (1963 and 1965). (Washington, D. C.: U.S. Government Printing Office), 1963 and 1965.

Urbano A. Zafra, Philippine Economic Handbook 1960. (Washington, D. C.), 1960.

TABLE 25

SOURCES AND FOOTNOTES (Continued)

- <sup>a</sup>Not applicable to the Philippines by virtue of Philippine Tariff Law of 1909.
- <sup>b</sup>Applicable only to GATT signatories and countries having trade agreements with the United States.
- <sup>c</sup>Not effective due to the continued suspension of the tax.
- <sup>d</sup>Not applicable to the Philippines because of preferential treatment.
- <sup>e</sup>Copra equivalent of the two excise taxes; not applicable because of internal nature of tax and preferential treatment.
- <sup>f</sup>Not applicable to the Philippines due to favored-nation agreement.
- <sup>g</sup>Elimination of 1.87 tax leaves only the 1.25 duty; however, not applicable to Philippines under the Laurel-Langley Agreement.
- <sup>h</sup>Not applicable to the Philippines by virtue of Philippine Tariff Law of 1909.
- <sup>i</sup>Philippines not a GATT member; same duty imposed.
- <sup>j</sup>Not applicable by virtue of Philippine Tariff Law of 1909.

In the early years of the century, France was the major market while Germany and England also took a significant share. The U. S. share of copra exports remained small until 1916 while coconut oil exports, although going largely to the United States, were relatively unimportant until 1917 (see Table 26A).

The dominance of the United States as a market for Philippine coconut products was established by 1917 and maintained up to the mid-1950s. In the pre-war period between 90 and 99% of coconut oil exports, and seldom less than half the copra exports, were shipped to U. S. markets (see Table 26A).

The World War I transition from Europe to the United States as a market for Philippine coconut products was due not so much to the U. S. Tariff Act of 1909, which introduced virtual free trade between the two countries but, rather, to the first world war which totally disrupted shipping to Europe and enormously increased U. S. demand for coconut products as a base for explosives. After the first world war the pre-war pattern was not resumed, as U. S. demand was now at a higher level and Europe increasingly obtained her supplies from other areas, notably Indonesia.

TABLE 26A

## EXPORTS OF COCONUT PRODUCTS BY DESTINATION, 1900-1940

Year	Copra			Coconut Oil		
	Total Quantity (000 M.T.)	United States Quantity (000 M.T.)	% of Total	Total Quantity (000 M.T.)	United States Quantity (000 M.T.)	% of Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1900	64.9	0.1	0.1			
1901	32.5	0.0	0.0			
1902	59.2	0.1	0.3			
1903	82.2	0.2	0.2			
1904	38.6	0.1	0.3			
1905	55.8	0.1	0.2			
1906	60.6	0.4	0.8	0.7	0.4	59.3
1907	58.6	2.1	4.1	0.8	0.2	18.7
1908	97.5	3.8	3.6	2.9	1.8	59.9
1909	109.0	5.9	5.5			
1910	120.5	7.1	6.0			
1911	142.2	15.2	10.5			
1912	142.8	21.2	14.2			
1913	82.2	10.0	12.5	5.0	4.8	95.6
1914	87.3	18.2	20.1	11.9	11.9	100.0
1915	139.1	21.2	15.8	13.5	13.4	99.4
1916	72.3	35.5	49.7	16.1	15.3	94.1
1917	92.2	68.3	73.4	45.2	45.1	99.7
1918	55.1	55.1	99.9	115.3	113.5	98.2
1919	25.1	2.3	9.3	139.9	85.4	62.1
1920	25.8	1.4	5.1	77.6	71.9	93.2
1921	150.3	52.3	33.1	90.3	80.5	86.9
1922	173.1	89.4	51.3	107.2	106.7	99.4
1923	207.1	129.3	62.3	89.2	84.8	95.1
1924	156.8	107.5	68.3	111.6	110.6	99.0
1925	146.7	116.2	79.2	104.1	96.4	93.0
1926	174.0	129.1	74.3	117.3	114.9	98.1
1927	199.3	157.8	79.5	144.8	141.6	97.8
1928	234.4	182.6	78.1	142.2	140.8	98.9
1929	173.6	129.6	73.5	190.5	188.7	99.0
1930	174.3	141.2	79.3	147.4	146.1	99.0
1931	174.2	120.9	66.1	165.0	148.7	90.4
1932	137.2	83.0	59.5	114.7	110.3	95.9
1933	208.8	208.0	66.4	159.6	157.5	98.4
1934	342.7	153.5	45.3	144.8	135.9	94.1
1935	252.9	208.1	82.9	165.2	162.2	98.0
1936	291.1	182.5	65.2	159.6	150.9	94.7
1937	236.5	207.5	90.2	163.3	160.3	98.3
1938	342.1	227.4	66.1	165.6	159.7	96.2
1939 <sup>a</sup>	190.3	96.2	49.6	90.9	86.4	94.0
1940 <sup>b</sup>	402.3	244.1	59.4	175.0	150.3	83.4

Source: Annual Report of the Insular Collector of Customs, 1940.

<sup>a</sup>January-June, 1939.<sup>b</sup>Fiscal year, July 1, 1939 to June 30, 1940.

TABLE 26B  
EXPORTS OF COCONUT PRODUCTS, BY DESTINATION, 1949-1965

C O P R A					
Year	Total	United States		Europe <sup>a</sup>	
	Quantity (000 Metric Tons)	Quantity (000 Metric Tons)	% of Total	Quantity (000 Metric Tons)	% of Total
	(1)	(2)	(3)	(4)	(5)
1949	528.7	355.9	67.3	99.1	18.7
1950	707.2	457.8	64.7	116.9	16.5
1951	775.0	392.8	50.7	246.4	31.8
1952	670.8	305.2	45.5	233.8	34.8
1953	606.9	314.3	51.8	194.4	32.0
1954	763.2	301.8	39.5	302.1	39.6
1955	804.8	309.9	38.5	368.7	45.8
1956	966.3	338.6	35.0	491.7	50.9
1957	943.0	320.3	32.9	491.9	52.5
1958	811.9	313.9	38.7	415.7	51.2
1959	681.1	305.8	44.9	302.2	44.4
1960	804.4	279.6	34.8	443.8	55.2
1961	627.5	217.7	34.7	375.6	59.8
1962	779.4	267.5	34.3	422.1	54.2
1963	1,032.7	277.2	26.8	679.3	65.8
1964	910.0	254.1	27.9	580.6	63.8
1965	883.5	260.4	29.5	521.4	59.0

Source: Central Bank, Statistical Bulletin. Percentages calculated from unrounded figures.

<sup>a</sup>Includes Netherlands, Denmark, Belgium, Italy, Norway, Sweden, Germany, and the United Kingdom.

TABLE 26B  
EXPORTS OF COCONUT PRODUCTS, BY DESTINATION, 1949-1965 (Continued)

Year	C O P R A					
	Latin America		Canada		Others	
	Quantity (000 M.T.)	% of Total	Quantity (000 M.T.)	% of Total	Quantity (000 M.T.)	% of Total
	(6)	(7)	(8)	(9)	(10)	(11)
1949	1.0	0.1	14.8	2.8	57.9	10.9
1950	40.9	5.8	15.3	2.2	76.2	10.8
1951	35.6	4.6	21.2	2.7	79.0	10.2
1952	43.5	6.5	24.9	3.7	72.8	10.8
1953	58.1	9.6	9.3	1.5	30.9	5.1
1954	67.4	8.8	18.2	2.4	20.5	2.7
1955	92.6	11.5	5.8	0.7	27.8	3.4
1956	102.5	10.6	6.1	0.6	27.4	2.8
1957	96.5	10.2	9.3	1.0	24.9	2.6
1958	55.2	6.8	1.8	0.2	25.4	3.1
1959	44.2	6.5	-	-	29.9	4.4
1960	51.3	6.4	-	-	29.6	3.7
1961	13.6	2.2	-	-	20.6	3.3
1962	46.3	5.9	-	-	43.5	5.6
1963	6.6	0.6	-	-	69.1	6.7
1964	14.0	1.5	-	-	61.3	6.7
1965	16.7	1.9	-	-	85.0	9.7

Source: Central Bank, Statistical Bulletin. Percentages calculated from unrounded figures.

TABLE 26B  
EXPORTS OF COCONUT PRODUCTS, BY DESTINATION, 1949-1965 (Continued)

C O C O N U T   O I L					
Year	Total	United States		Others	
	Quantity (000 Metric Tons)	Quantity (000 Metric Tons)	% of Total	Quantity (000 Metric Tons)	% of Total
	(12)	(13)	(14)	(15)	(16)
1949	61.3	49.7	81.1	11.6	18.9
1950	69.8	63.6	91.1	6.2	8.9
1951	77.8	40.2	51.6	37.6	48.4
1952	80.5	56.8	70.5	23.8	29.5
1953	59.4	58.2	97.8	1.3	2.2
1954	65.2	64.0	98.1	1.2	1.9
1955	74.2	69.9	94.3	4.2	5.7
1956	108.9	89.5	82.2	19.4	17.8
1957	97.6	86.2	88.3	11.4	11.7
1958	86.9	82.2	94.5	4.8	5.5
1959	64.6	58.6	90.7	6.0	9.3
1960	59.7	59.6	99.8	0.1	0.2
1961	74.4	74.2	99.8	0.1	0.2
1962	147.6	142.8	96.8	4.8	3.2
1963	195.3	168.4	86.2	26.9	13.8
1964	229.4	183.6	80.0	45.8	20.0
1965	235.8	188.2	79.8	47.6	20.2

Source: Central Bank, Statistical Bulletin. Percentages calculated from unrounded figures.

TABLE 26B

## EXPORTS OF COCONUT PRODUCTS, BY DESTINATION, 1949-1965 (Continued)

Year	D E S I C C A T E D   C O C O N U T				
	Total	United States		Others	
	Quantity (000 Metric Tons)	Quantity (000 Metric Tons)	% of Total	Quantity (000 Metric Tons)	% of Total
	(17)	(18)	(19)	(20)	(21)
1949	57.6	56.0	97.2	1.6	2.8
1950	73.1	70.0	95.8	3.1	4.2
1951	47.4	44.0	92.7	3.5	7.3
1952	39.1	38.6	98.7	0.5	1.3
1953	49.5	49.2	99.4	0.3	0.6
1954	45.6	44.9	98.3	0.8	1.7
1955	48.5	48.3	99.5	0.2	0.5
1956	48.7	47.3	97.2	1.3	2.8
1957	54.9	52.1	94.8	2.8	5.2
1958	51.6	48.5	92.9	3.1	6.1
1959	49.5	48.3	97.6	1.2	2.4
1960	58.8	53.8	91.5	5.0	8.5
1961	59.2	55.2	93.3	3.9	6.7
1962	62.6	54.4	86.8	8.2	13.2
1963	70.3	59.0	83.0	11.2	16.0
1964	69.5	58.3	83.0	11.2	16.0
1965	67.7	53.4	78.9	14.3	21.1

Source: Central Bank, Statistical Bulletin. Percentages calculated from unrounded figures.

In 1921, under the impact of a world-wide slump in agricultural prices, the coconut industry suffered severely and was granted protection under the U. S. Emergency Act of 1921 and the U. S. Tariff Act of 1922. By raising tariffs against non-Philippine coconut oil, the U. S. market was virtually reserved for the Philippine product. The protection afforded to Philippine coconut oil by U. S. tariff policy was further increased in 1934 with the introduction of a processing tax levied on coconut oil from all sources. The revenue collected from this tax on Philippine coconut oil was returned to the Philippine government. A further additional tax of two cents per pound was levied on oil from non-Philippine sources. At the same time the Philippines was given a quota of 200,000 long tons, but this was not filled in the pre-war period.

However, even without preferential tariffs it is likely that almost all of the coconut oil produced in the pre-war period would have found a market in the United States. The United States has always preferred to import oil rather than copra because, unlike Europe, she has an ample supply of animal foodstuffs and has little use for the by-product of copra. This is the reason why a much higher share of coconut oil exports have always gone to the United States than of copra exports.

Throughout the 1950-65 period the percentage of total copra exports going to the United States fell almost continuously, from 50% in

the early 1950s to below 30% in the mid-1960s. Even the absolute quantity showed a downward trend (see Table 26B). At the same time Europe took an increasingly large share of copra exports. By the mid-1950s Europe had replaced the United States as the major market for Philippine copra and by 1965 was importing twice as much as the United States.

In the 1950s most Philippine coconut oil continued to be exported to the United States but in quantities that averaged less than half those of the 1930s. By 1962 exports of oil had recovered to something like the pre-war level, but then in 1963 they showed a dramatic new trend. For the first time in over 40 years the share exported to the United States fell below 90% of the total. By 1965 this was down to 80% as a result of the opening of important new markets in Europe, especially in West Germany.

When coconut oil is converted to its copra equivalent, the combined share of copra and oil exported to the United States fell from 68% in 1950 to around 43% in the 1960s. The declining relative importance of the U. S. market is also reflected in desiccated coconut exports. More than 90% of production was exported to the United States throughout the 1950s, but this had fallen to below 80% by 1965.

A number of different factors have operated in the post-war period to reduce the relative importance of the U. S. market. The most

important trend has been the continuous advance of coconut oil substitutes in the United States. As a result, the combined imports of copra and coconut oil have remained more or less constant over the whole period. The initial stimulus to this substitution process arose from the isolation of the United States from Philippine sources of supply during the second world war. Important scientific advances were made, and production of many substitutes, especially soybeans, was greatly expanded.

There has been no parallel substitution process in Europe. This is due largely to the different relative costs of the substitutes. Soybeans, cotton seed, safflower seed, and corn oils are cheap coconut oil substitutes for the United States but not for Europe. To the extent that petroleum-based derivatives have replaced coconut oil in the manufacture of synthetic detergents, U. S. technological superiority appears to be the chief factor.

The economic policies of the importing countries have played relatively little role in changing the importance of the U. S. market. Throughout the post-war period, copra was duty free in the European market, but coconut oil was subject to tariffs ranging from 5 to 12% ad valorem. The U. S. processing tax of three cents per pound was not refunded to the Philippines in the post-war period. In 1957 this tax was suspended, thus encouraging exports to the U. S. market. Presumably in

response to this incentive, the share of copra exported to the United States rose from 33% in 1957 to 39% in 1958 and 45% in 1959. The percentage of coconut oil exported to the United States rose from 88% in 1957 to 94.5% in 1958.

Under the revised Laurel-Langley Agreement of 1955, a policy of progressive reductions in the free Philippine quota was introduced, but it was not until 1963 that exports exceeded the quota. Exports in excess of the quota are subject to a one cent per pound tariff, but this is a relatively small burden compared with the three cent per pound processing tax.

On balance, it is clear that the changing pattern of tariffs and quotas levied by Europe and the United States has not been a factor causing a reduction in the U. S. share. It has, if anything, operated towards an increase in the U. S. share. The planned progressive reduction in the Philippine quota to zero by 1974 may be expected to have some discouraging effect on exports to the United States, but in the post-war period, as a whole, the most significant change was the suspension and finally the abolition of the three cent processing tax.

Another factor which operated in the direction of expanding the U. S. share in the 1960s was the spectacular increase in the relative importance of coconut oil exports. The explanation of this increase is

analyzed in detail in Part II and the only point that need be noted here is that, although the U. S. share of coconut oil exports declined, it remained significantly higher than that for copra. The increase in the relative importance of coconut oil vis-a-vis copra, therefore, tended to increase the U. S. share.

One factor that is difficult to evaluate has been the influence of a conscious search for new markets stimulated by the approaching expiration of the Laurel-Langley Agreement.

Over the period, as a whole, from 1900 to 1965, the dominant determinant of the direction of Philippine coconut trade was the pattern of real demand. Economic policies were of secondary importance. Three major periods were distinguished--1900 to 1916, when the main export was copra to the European market; 1916 to 1940 was the period of sustained dominance of the U. S. market; and 1950 to 1965 were years which were characterized by a steady decline in the U. S. market share.

**PART II**

**GROWTH, STRUCTURAL CHANGE  
AND PRODUCTIVITY**

Having described the major features of the Philippine coconut industry in Part I, it is now possible to develop a more analytical account of the growth and development of the industry.

This part is divided into three sections: growth, structural change, and productivity. Growth refers to absolute increases in output; structural change, to the changing composition of production; and productivity, to yield and efficiency.

#### GROWTH OF COCONUT PRODUCT EXPORTS 1900-1965

Exports of coconut products by volume grew almost continuously over the whole period 1900-1965. The period 1900-1940, in particular, was one of sustained rapid growth with exports of copra and coconut oil growing at an average annual rate of 6% (Column 3, Table 27). After the second world war, exports of coconut products recovered very rapidly, exceeding the pre-war high by 1947. The fifties was a decade of slow growth, but a high growth rate was resumed following decontrol in the early sixties (Table 28).

Tables 27, 28, and 58 give detailed export figures for the whole period. The pre-war growth of copra and coconut oil exports, and their share in total exports, are shown in Table 27. Pre-war exports of desiccated coconut are shown in Tables 28 and 58. They first reached

TABLE 27

EXPORTS OF COPRA AND COCONUT OIL, 1900-1940  
(000 M. T.; all in copra equivalent)

Year	Copra	Coconut Oil (Copra Equiv.)	Total	Copra % of Total Exports	Coconut Oil % of Total Exports	Copra and Coconut Oil % of Total Exports
	(1)	(2)	(3)	(4)	(5)	(6)
1900	64.9		64.9	14		14
1901	32.5		32.5	7		7
1902	59.2		59.2	9		9
1903	82.2		82.2	12		12
1904	38.6		38.6	7		7
1905	55.8		55.8	10		10
1906	60.6	1.1	61.7	13		13
1907	58.6	1.3	59.9	14		14
1908	97.5	4.5	102.0	19		20
1909	109.0		109.0	22		22
1910	120.5		120.5	26		26
1911	142.2		142.2	29		29
1912	142.8	P	142.8	26		26
1913	82.2	8.1	90.3	20	2	22
1914	87.3	19.2	106.5	16	5	21
1915	139.1	21.7	160.8	21	5	26
1916	72.3	25.9	78.2	10	6	16
1917	92.2	72.8	165.0	9	12	21
1918	55.1	185.8	240.9	4	23	27
1919	25.1	225.4	250.4	4	33	37
1920	25.8	124.8	150.6	2	15	17
1921	150.3	145.3	295.6	15	18	33
1922	173.1	172.6	345.7	15	16	31
1923	207.1	143.0	350.1	16	12	28
1924	156.8	179.6	336.4	12	13	25
1925	146.7	167.6	314.3	11	14	25
1926	174.0	188.8	362.8	14	16	30
1927	199.3	233.1	432.4	12	16	28
1928	234.4	229.0	463.4	15	15	30
1929	173.6	306.7	480.3	9	18	27
1930	174.3	237.3	411.6	10	14	24

TABLE 27

EXPORTS OF COPRA AND COCONUT OIL, 1900-1940 (Continued)  
 (000 M. T.; all in copra equivalent)

Year	Copra	Coconut Oil (Copra Equiv.)	Total	Copra % of Total Exports	Coconut Oil % of Total Exports	Copra and Coconut Oil % of Total Exports
	(1)	(2)	(3)	(4)	(5)	(6)
1931	174.2	265.7	439.9	8	14	22
1932	137.2	184.6	321.8	5	8	13
1933	208.8	256.9	465.7	8	9	17
1934	342.7	232.9	575.6	8	6	14
1935	252.9	266.0	518.9	12	13	25
1936	291.1	256.9	548.0	11	10	21
1937	236.5	262.9	499.4	11	14	25
1938	342.1	266.7	608.8	11	9	20
1939 <sup>a</sup>	190.3	146.3	336.6	9	7	16
1940	402.3	281.7	684.0	12	9	21

Source: Annual Report of the Insular Collector of Customs (Manila: Bureau of Printing, 1940).

<sup>a</sup>January to June, 1939, only.

TABLE 28

## COCONUT PRODUCTS: EXPORTS, 1929-1965

Year	COPRA			COCONUT OIL		
	Quantity (000 Metric Tons)	Nut Equiv. (Million Nuts)	Value (Million Pesos)	Quantity (000 Metric Tons)	Nut Equiv. (Million Nuts)	Value (Million Pesos)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1929	173.6	694.4	31.1	190.5	1,270.0	58.4
1930	174.3	697.2	26.9	147.4	982.8	38.3
1931	174.2	696.8	18.3	164.9	1,100.0	30.1
1932	137.2	548.8	10.3	114.7	764.0	15.3
1933	308.8	1,235.2	17.9	159.6	1,064.0	18.3
1934	342.7	1,370.8	17.2	144.8	965.2	13.6
1935	252.9	1,011.6	22.0	164.2	1,094.4	24.5
1936	291.1	1,164.4	30.0	158.9	1,060.0	27.7
1937	236.5	946.0	32.0	162.8	1,085.2	41.1
1938	342.1	1,368.4	24.5	165.1	1,100.0	21.5
1939 <sup>a</sup>	190.3	761.2	12.4	90.0	600.0	9.7
1940 <sup>b</sup>	402.3	1,609.2	26.9	170.1	1,134.0	20.7
-	-	-	-	-	-	-
1945	0.4	1.6	0.1	-	-	-
1946	387.0	1,548.0	78.0	1.5	10.0	0.6
1947	1008.4	4,033.6	354.4	17.3	115.2	13.1
1948	586.6	2,346.4	309.4	46.6	310.8	39.9
1949	528.7	2,114.8	179.3	61.3	408.4	35.0
1950	707.2	2,828.8	275.9	69.8	465.2	25.0
1951	775.0	3,100.0	306.3	77.8	518.4	50.0
1952	670.8	2,683.2	181.3	80.5	536.4	30.8
1953	606.9	2,427.6	233.9	59.4	396.0	34.3
1954	763.2	3,052.8	260.1	65.2	434.4	33.1
1955	804.8	3,219.2	237.4	74.2	508.0	33.1
1956	966.3	3,865.2	268.2	108.9	726.0	48.0
1957	943.0	3,772.0	263.9	97.6	650.4	42.7
1958	811.9	3,247.6	278.2	86.9	580.0	48.2
1959	681.1	2,724.4	276.1	64.6	430.4	45.0
1960	804.4	3,217.6	346.6	59.7	398.0	39.2
1961	627.5	2,510.0	242.5	74.4	496.0	43.8
1962	779.4	3,117.6	396.5	147.6	984.0	110.8
1963	1032.7	4,130.8	590.6	195.3	1,302.0	164.0
1964	910.0	3,640.0	547.9	229.4	1,529.2	210.4
1965	883.5	3,534.0	596.7	235.8	1,572.0	239.0

<sup>a</sup>January-June, 1939.<sup>b</sup>June, 1939-June, 1940 (Fiscal Year 1940)

TABLE 28

## COCONUT PRODUCTS: EXPORTS, 1929-1965

Year	COPRA MEAL & CAKE		DESICCATED COCONUT			TOTAL	
	Quantity (000 Metric Tons)	Value (Million Pesos)	Quantity (000 Metric Tons)	Nut Equiv. (Million Nuts)	Value (Million Pesos)	Nut Equiv. (Million Nuts)	Value (Million Pesos)
	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1929	113.8	7.6	22.3	111.5	7.1	2,075.9	104.2
1930	89.9	3.8	19.9	99.5	5.9	1,779.5	74.9
1931	98.6	3.0	16.8	84.0	3.6	1,880.8	55.0
1932	75.8	2.1	16.1	80.5	3.2	1,393.3	30.9
1933	99.9	2.1	17.9	89.5	3.4	2,388.7	41.7
1934	99.6	2.1	23.5	117.5	4.5	2,453.5	37.4
1935	101.8	3.3	33.9	169.5	7.9	2,275.5	57.7
1936	108.3	3.6	33.7	168.5	3.8	2,392.9	70.1
1937	110.5	5.8	40.7	203.5	12.7	2,234.7	91.6
1938	129.3	5.5	34.3	171.5	7.6	2,639.9	59.1
1939 <sup>a</sup>	54.7	1.9	16.9	84.5	3.4	1,445.7	27.4
1940 <sup>b</sup>	118.3	4.2	41.5	207.5	8.7	2,950.7	60.5
1941	-	-	-	-	-	-	-
1945	-	-	-	-	-	-	-
1946	5.8	0.6	4.7	23.5	4.1	1,581.5	83.3
1947	27.1	4.3	21.2	106.0	19.1	4,254.8	390.9
1948	53.7	7.4	61.4	307.0	57.5	2,964.2	414.2
1949	65.3	7.8	57.6	288.0	33.7	2,811.2	260.8
1950	62.9	7.6	73.1	365.5	48.3	3,659.5	356.8
1951	65.9	6.9	47.4	237.0	29.8	3,855.4	393.0
1952	78.8	11.3	39.1	195.5	19.5	3,415.1	242.9
1953	63.9	7.9	49.5	247.5	31.5	3,071.1	307.6
1954	75.4	7.6	45.6	228.0	27.0	3,715.2	327.8
1955	81.4	8.8	48.5	242.5	25.6	3,969.7	304.9
1956	99.7	10.0	48.7	243.5	25.7	4,834.7	351.9
1957	99.2	8.4	54.9	274.5	30.3	4,696.9	345.3
1958	94.3	8.8	51.6	258.0	32.8	4,085.6	368.0
1959	80.8	10.8	49.5	247.5	36.3	3,402.3	368.2
1960	81.5	12.2	58.8	294.0	47.1	3,909.6	445.1
1961	88.6	11.6	59.2	296.0	40.0	3,302.0	337.9
1962	144.1	31.9	62.6	313.0	52.9	4,414.6	592.1
1963	168.1	41.2	70.3	351.5	64.6	5,784.3	860.4
1964	192.5	38.2	69.5	347.5	68.5	5,516.7	865.0
1965	181.6	41.4	67.7	338.5	71.8	5,444.5	948.9

<sup>a</sup>January-June, 1939.<sup>b</sup>June, 1939-June, 1940 (Fiscal Year 1940).

TABLE 28

COCONUT PRODUCTS: EXPORTS, 1929-1965 (Continued)

SOURCES:

Columns 2, 5, 8, 10: 1929-1940: Annual Report of the Insular Collector of Customs to the Honorable--The Secretary of Finance--for the Fiscal Year Ended December 31, 1929, 1930. (Vicente Aldanese--Insular Collector of Customs), Manila: Bureau of Printing.  
1945-1948: The Philippine Copra Exporters Association Yearbook.  
1949-1965: Central Bank, Statistical Bulletin, Vol. XVII, No. 3, Dec., 1965.

Column 3 - Column 2 multiplied by 4. Conversion of copra into nuts using the equivalent of 4 nuts = 1 kilogram of copra, resecada.

Column 6 - Coconut oil is first converted into copra equivalent, then into nuts.  
Conversion ratios: 1 ton of copra = 0.6 tons of coco. oil  
1 kilo of copra = 4 nuts  
Column 5 is divided by 0.6 to get the number of tons of copra and then multiplied by 4 to arrive at Column 6.

Column 11 - Column 10 is multiplied by 5, since 5 nuts equals 1 kilogram of desiccated coconut.

Columns 4, 7, 9, 12:

1929-1940: Annual Report of the Insular Collector of Customs.  
1946-1965: U. S. dollar values from the Central Bank Statistical Bulletin have been converted into Philippine pesos at the exchange rates prevailing for the particular years.

Column 13: Aggregates of Columns 3, 6, and 11.

Column 14: Values added from Columns 4, 7, 9, and 12.

significant proportions in 1925, and exports by volume grew at an average rate of 7.7% between 1925 and 1940 (see Table 58).

Table 28 gives export statistics of the four major coconut products from 1929-1965. In this table, each product is converted to its nut equivalent and the total "processed nuts" exported is given in Column 13. Table 58 gives similar information over a longer time period in terms of copra equivalents, based on slightly different conversion factors.

Diagram I shows the average growth rates of production, domestic consumption, and exports by volume over the period 1930-1965. Although the growth rates could easily be shown in tabular form, the diagram is helpful because it highlights the relationships between the different parts of the industry and shows the flow of nuts or nut equivalents. From the top of the diagram, it can be seen that bearing trees produce nuts which are either consumed at home or sold commercially. The nuts which are not directly consumed are converted into either copra or desiccated coconut. Desiccated coconut production is assumed to be entirely exported while copra is either converted into coconut oil and meal or is exported. The coconut oil is either consumed domestically or exported.

The numbers inside the squares refer to the rate of increase of the product concerned while the numbers along the arrows refer to the

growth rates of the various uses of the product or, alternatively, the growth rates of inputs. This becomes clearer when specific examples are taken. Over the 35-year period from 1930 to 1965, copra production, for example, increased by 3.4% per year, copra exports rose by 4.7%, and copra used by domestic coconut oil manufacturers, by 2.0%. Coconut oil production, therefore, increased by 2%, but exports of oil rose by only 1.4%. This, however, was compensated by an increase in domestic consumption of 4.3%.

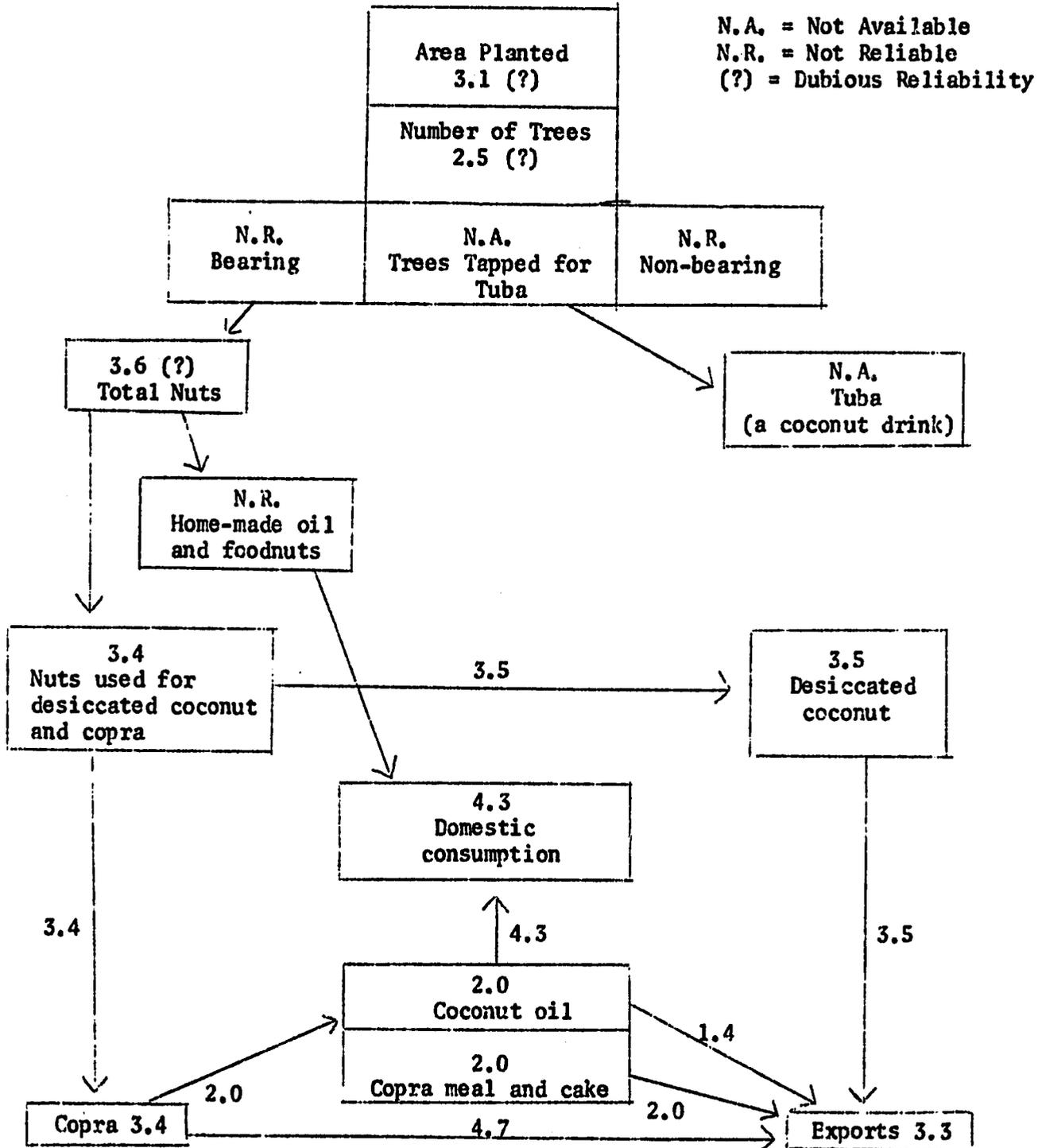
According to the official data, the area planted grew at 3.1% per annum; the number of trees, at 2.5%; and total nut production expanded at an average rate of 3.6% per year. Unfortunately, most of the data relating to area, trees, and total nut production are either not reliable or unavailable.<sup>37</sup> The official data on the production of coconut oil, copra, and desiccated coconut are also of very limited use.

The official production statistics are reproduced in Appendix II, but the data used in the diagrams for the analysis are all derived from the export statistics. The derivation of estimates of domestic consumption and production from export statistics was based on the following assumptions:

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<sup>37</sup> A critique of this data is found in Appendix I, Sources and Reliability of Coconut Statistics.

DIAGRAM I  
**COCONUT PRODUCTS**  
**AVERAGE ANNUAL GROWTH RATES 1930-65**  
**(Coconut Products by Volume of Production)**



1) The negligible quantity of domestically consumed desiccated coconut was ignored and production was assumed equal to exports.

2) Although a very small part (5%?) of copra meal and cake is consumed domestically, it was assumed that all production was exported. As the copra meal/cake is a joint product produced in fixed proportion with coconut oil, it was possible to estimate total coconut oil production from the export of copra meal and cake.

3) Domestic consumption was estimated by subtracting exports of coconut oil from estimated production. Domestic consumption refers to factory produced oil only, as home-made oil and foodnuts were ignored due to lack of reliable data.

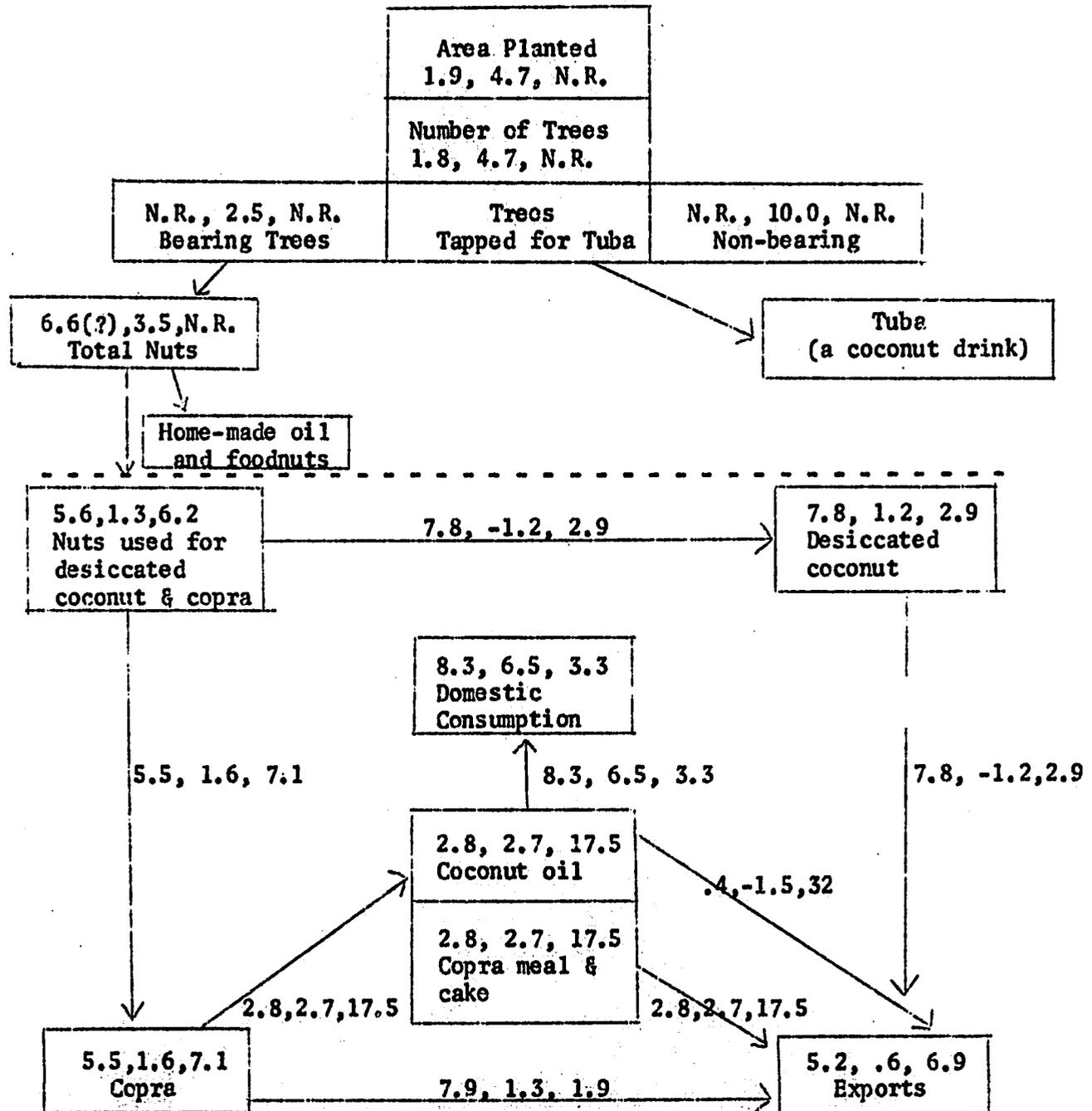
4) Copra production was estimated from coconut oil production plus copra exports.

Despite the absence of reliable production statistics, it proved possible, in our judgment, to derive usable data from the relatively satisfactory export statistics.

The years 1930-1965 cover three periods in which the rate of growth of the industry varied substantially. Diagram II shows the annual rates of growth for these three periods. All the data for the bottom half of the diagram (below the dotted line) are derived from the export statistics, while the much less reliable agricultural statistics (Tables 56

DIAGRAM II

COCONUT PRODUCTS  
 AVERAGE ANNUAL GROWTH RATES  
 1930-1940, 1950-1960, 1960-1965



and 57) are used for the top half of the diagram. In this and subsequent diagrams, attention will be focused on the relatively reliable data that have been derived from export statistics.

From Diagram II, it can be seen that for the industry as a whole, the rate of growth from 1950 to 1960 was very much slower than in either of the other two periods. From 1950-1960, the total of nuts used for desiccated coconut and copra increased by 1.3% per year, yet exports rose only by .6%. The difference is accounted for by an increase in domestic consumption of coconut oil of 6.5% per year. Coconut oil production, however, was rising at only 2.7% per year with a consequent decline in oil exports averaging 1.5% per year.

From 1960 to 1965, the slow rates of growth of the fifties were dramatically reversed. Production and export of the four major products increased, but there were important differences among them. Copra production increased by an average of 7.1% during this period, but most of the increase went into domestic manufacture of coconut oil rather than copra exports. Coconut oil production expanded by an average of 17.5% per year from 1960 to 1965, most of the increase in production going to exports rather than domestic consumption, causing the former to rise by a remarkable 32% per year.

Any analysis of the determinants of the observed long-run rates of growth in the industry is confronted at the outset by a major paradox. In the pre-war period, the long-run trend in the price of copra fell relative to the price of corn and rice. Yet, despite this unfavorable price trend, the production of copra expanded more than the production of corn or rice.<sup>38</sup>

The relative prices of copra and rice are shown in Table 29 and production trends in Table 30. Column 5 of Table 29 highlights the unfavorable trend in the price of copra compared with rice. Yet, despite this adverse price movement, production of coconut products expanded sixfold while that of rice increased only two and a half times over the years 1912-14 to 1940.

It is true that the official production statistics for coconuts (Column 3, Table 30) do not show such a large increase, but this is because they greatly overstated production in the early part of the period. In 1920, for example, official production was two and a half times exports,

<sup>38</sup>Rice is grown almost everywhere coconuts are grown although the opposite is not true. Rice is used here to represent all alternatives to coconuts.

TABLE 29

PRICE INDICES AND RELATIVE PRICES OF COPRA,  
CORN & RICE, 1912-14 TO 1933  
(1912-14 = 100)

Year	INDEX OF PRICES			RELATIVE PRICES	
	Copra	Rice	Corn	$\frac{\text{Copra}}{\text{Rice}}$	$\frac{\text{Copra}}{\text{Corn}}$
(1)	(2)	(3)	(4)	(5)	(6)
1912-14	100	100	100	100	100
1915	63	104	75	61	84
1916	79	101	72	78	109
1917	83	108	90	77	92
1918	77	143	128	54	60
1919	100	212	212	47	47
1920	173	266	230	81	31
1921	92	143	180	64	51
1922	70	122	150	57	47
1923	83	129	133	64	62
1924	87	159	136	55	64
1925	97	159	129	61	75
1926	104	162	156	64	66
1927	92	152	134	60	69
1928	92	139	119	66	77
1929	82	147	129	56	63
1930	73	136	127	54	58
1931	47	99	86	47	55
1932	38	72	49	53	77
1933	29	50	56	58	52

Source: Derived from prices as quoted in Philippine Statistical Review, Department of Agriculture and Commerce (Manila: Bureau of Printing, 1934) Vol. I, No. 1, p. 25.

TABLE 30

INDICES OF PRODUCTION OF COCONUTS  
AND RICE, 1912-14 TO 1940  
(1912-1914 = 100)

Year	Coconuts		Rice Production	Coconuts
	Exports	Production		Rice (2)/(4)
(1)	(2)	(3)	(4)	(5)
1912-14	100	100	100	100
1916	87	92	130	67
1918	210	188	155	135
1920	131	193	190	68
1922	304	189	201	151
1924	304	198	209	145
1926	333	225	221	150
1928	428	269	229	186
1930	382	233	228	167
1932	299	267	220	135
1934	530	359	211	251
1936	516	372	253	205
1938	559	287	242	230
1940	607			

Sources: Column 2: Derived from exports of all coconut products expressed in copra equivalent. From A. J. Nyberg, Growth in the Philippine Coconut Industry (1901-66) (mimeograph).

Column 3: Ibid.

Column 4: Philippine Agricultural Statistics, Vol. I, 1954. Derived from production statistics.

an impossibility in view of the small domestic market for coconuts.

Exports must be accepted as the best guide to total production.<sup>39</sup>

There are several possible explanations which do not imply backward bending supply curves for coconut production. In the short run, the farmer would continue to harvest coconuts so long as he could cover his marginal costs. For coconut production, the cost of harvesting the nuts is very low. Labor is the main cost and, in the typical case of the small farmer who uses only his own labor, the opportunity cost of his time in the short run must be close to zero. The major long-run cost of coconut production involves the use of land to produce coconuts rather than some alternative crop. The long run in coconut production is at least seven or eight years, the time it takes for a tree to begin to bear.

It is not surprising, therefore, that even extremely low prices in any given year did not adversely affect the production level at that time. A decision not to plant at a time of low prices will only affect production in seven or eight years' time.

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<sup>39</sup>The data on area under cultivation show a much larger increase for coconuts than rice over the period 1912-1939. The area planted to rice increased from 1.0 million hectares in 1912 to 1.965 million in 1939. (Danz, Philippine Agricultural Statistics, Manila: Bureau of Printing, Vol. I, 1954, p. 26.) The area planted to coconuts increased from .223 million hectares in 1912 to 1.015 million hectares in 1939. (Nyberg, Growth of Output, p. 17.)

In this case, however, even in the long run (and allowing for a seven-year time lag) changes in relative prices in favor of rice were associated with relatively larger production increases of coconuts. From 1913-1933, the price trend was favorable to rice (Column 6, Table 29), but the production trend over the period 1920-1940 was favorable to coconuts (Column 5, Table 30).<sup>40</sup>

There are two strands in the explanation of this paradox. In the first place, although relative price movements favored rice, this was offset to a substantial extent by movements in relative costs which were favorable to coconut production. Costs of producing rice in terms of land were rising over this period as a result of declining yield. Over the five crop years, 1916-17 to 1920-21, the yield of rice per hectare averaged 1.24 tons. From 1927-28 to 1931-32, it averaged 1.21 tons; and from 1932-33 to 1936-37 it averaged 1.08 tons.<sup>41</sup> This declining rice yield is explained largely by the extension of the cultivated rice area to less suitable regions. Among the most important areas to be opened up to rice cultivation in this period was the Cagayan Valley and Southern-Western Mindanao. Here, the yield was substantially below that obtained in

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<sup>40</sup>Table 59 shows that over the period 1912-40 the price of copra also fell relative to the prices of abaca, sugar, and corn.

<sup>41</sup>Leon Mears, Rice Production, Area, and Yield in the Philippines. Table 1 (Mimeo) July 21, 1966 (Derived from annual figures.)

Central Luzon, the traditional but long fully cultivated heartland of Philippine rice growing. The increase in total rice production over the years 1916-1940 was obtained by expanding the cultivated area into the lower yielding frontier regions. Over this period, the marginal and average cost of rice production in terms of land was rising.

The reverse was the case for coconut production. It has already been shown<sup>42</sup> that there has been a long-run trend for Luzon to account for a declining, and Mindanao, a rising, share of total coconut production. As with rice, the shift in coconut production is closely connected with the shift in population and the opening up of frontier regions.

The new regions of settlement and cultivation were largely in Mindanao where soil and climate combined to produce conditions which are close to ideal for coconut growing. The yield in the frontier regions for coconuts was significantly higher than in the traditional areas of Quezon and Laguna.<sup>43</sup> Thus, costs in terms of land associated with long-run expansion of coconut production were declining.

<sup>42</sup>See Part I, "Shift in Geographical Location."

<sup>43</sup>See the following section on productivity.

It appears likely that the adverse shift in demand for coconuts was offset by a favorable shift in costs. The evidence at the provincial level supports this hypothesis. In Laguna, for example, which was already fully cultivated at the beginning of the period, rice production increased substantially more than that of coconuts. In this case, relative costs of production in terms of land remained constant because new areas were not brought under cultivation.

The second factor that contributed to the long-run expansion of coconut production despite adverse relative price movements was the magnitude of surplus profit available to the industry over the period 1910-21. World demand for coconut products grew enormously during this period and, because of inelastic short-run supply, the resulting price was substantially above the cost of production. There are no contemporary cost-of-production studies available, but Gothwaite, writing in 1925, said that the price of copra would have to fall to about two and two-thirds cents per pound before exports would be seriously curtailed.<sup>44</sup> Even at the bottom of the market in 1921-22 the price did not

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<sup>44</sup>E. D. Gothwaite, Trade in Philippine Copra and Coconut Oil, U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce (Washington: Government Printing Office, 1925) p. 57. Quoted in K. Snodgrass, Copra & Coconut Oil, Food Research Institute (Stanford: Stanford University Press, 1928) p. 117.

fall below three and one-quarter cents. No such surplus profits were available to rice farmers over the same period. Even with falling relative prices, copra production remained the more profitable enterprise because of the existence of this significant, though diminishing, surplus profit.

Figure I illustrates the long-run supply and demand for Philippine copra. The long-run demand schedule slopes downwards, reflecting the adverse movement in the price of copra relative to rice. The cost curve also slopes downwards due to the favorable movement in the cost of production of copra relative to rice.

In the early fifties coconut production continued to rise faster than rice production, but from 1957 to 1965 production of both products expanded at approximately the same rate (see Table 32). Given the production lag of some seven years for copra, this is evidence that by the early fifties coconut production was no longer relatively more profitable than rice.

There can hardly be any doubt that from 1912-14 to 1950-55 the relative price of coconut declined more than relative cost. The average price of rice rose from ₱2.6 per cavan in 1912-14 to an average of ₱10 per cavan over the years 1951-54. In contrast with this fourfold increase in prices, that of copra only doubled over the same period. The price of

TABLE 31  
PRICES OF RICE AND COPRA, 1951-1966

Year	Rice (Pesos per Cavan)	Copra (Pesos per 100 Kg.)	Rice (1960=100)	Copra (1960=100)	Relative Prices (5)/(4)
(1)	(2)	(3)	(4)	(5)	(6)
1951	11.88	36.16	122	91	75
1952	12.01	24.63	124	62	50
1953	8.69	36.62	90	92	102
1954	8.84	30.76	91	77	85
1955	9.70	27.12	100	68	68
1956	8.95	26.02	92	65	71
1957	10.30	28.43	106	71	67
1958	12.00	37.70	123	94	76
1959	8.42	46.66	87	117	135
1960	9.69	39.92	100	100	100
1961	11.62	38.14	119	96	81
1962	10.78	47.31	111	119	107
1963	12.36	54.09	127	135	106
1964	14.68	56.00	151	140	93
1965	14.20	64.25	146	161	110

Source: Column 2: Compiled by L. Mears from Daily Report of the Market Research Division, Bureau of Commerce (mimeograph).

Column 3: Central Bank, Statistical Bulletin, December, 1965.

TABLE 32  
 INDICES OF PRODUCTION OF COCONUTS  
 AND RICE, 1950/51-1964/65  
 (1957/58 = 100)

Year	COCONUT PRODUCTION		RICE PRODUCTION
	Official	Based on Exports	
(1)	(2)	(3)	(4)
1950/51	88	75	81
1951/52	56	78	88
1952/53	69	73	98
1953/54	76	65	99
1954/55	88	79	100
1955/56	91	84	102
1956/57	99	101	104
1957/58	100	100	100
1958/59	101	88	115
1959/60	100	75	116
1960/61	103	85	115
1961/62	123	73	122
1962/63	128	98	123
1963/64	120	124	120
1964/65	117	120	124

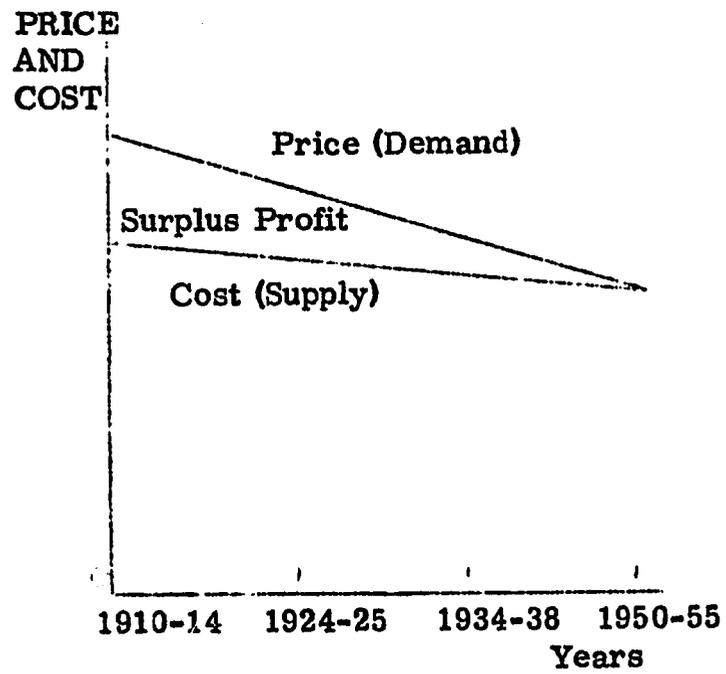
Source: Column 2: Derived from total nut production.

Column 3: Production of nuts derived from exports.

Column 4: Derived from data in L. Mears, op. cit.

FIGURE I

LONG-RUN SUPPLY AND DEMAND FOR PHILIPPINE COCONUTS



copra halved relative to rice but the changes in marginal yield, described previously, indicate a much smaller fall in the cost of copra relative to rice.

The long-run trend for coconut production to rise faster than rice output was resumed in the early fifties (see Table 32). From 1957 to 1965, however, both rice and coconut production (based on production statistics) expanded at approximately the same rate for the period taken as a whole.<sup>45</sup>

There was no clear trend in relative price movements between rice and copra over the years 1959 to 1965 (see Table 31). The price of copra relative to rice was substantially higher than in the early and mid-fifties. In view of the substantial devaluation<sup>46</sup> which took place between 1960 and 1962, it is at first surprising to find that the price of copra failed to rise even more substantially relative to that of rice. The two factors which largely neutralized the effect of the devaluation were the substantial upward movement of rice prices in the early sixties combined with a very

<sup>45</sup> For the early fifties, production of coconuts based on exports, as shown in Table 32 (Column 3), is more reliable than the production data. Col. 2. For the late fifties and until 1963, the official production data are more reliable than those based on exports because of the substantial unrecorded exports of copra which reached a peak in 1961. In 1963, copra exports were seriously overstated. See Appendix, Notes on Coconut Statistics, for an elaboration of these points.

<sup>46</sup> As a result of devaluation in stages, the export rate moved from P2=\$1 in 1959 to P2.50 in 1960, P2.75 in 1961, and P3.51 in 1962.

substantial fall in the world price of copra from the record peak of 1959.<sup>47</sup>

The period 1959 to 1965 marks a significant, if somewhat erratic, reversal of the long-run historical trend for the price of rice to improve relative to that of copra. Because of the seven-year gestation period, it is too early to see what effect this will have on the supply of coconuts. If information were available on new planting, then the future supply of coconuts could be predicted with a reasonable measure of accuracy. However, accurate data of this type are not available.

<sup>47</sup>See Part III for discussion of the relationship between the world and the Philippine farm price of copra.

## STRUCTURAL CHANGE

The literature on growth and development gives considerable attention to the factors influencing structural change of the economy as a whole. Structural change is held to be significant in various ways, a relative decline in the share of income originating in agriculture being generally associated with economic development.

The coconut industry is interesting as a case study in economic development partly because it has the basic structural features of the economy as a whole. As with the output of the economy, part of the coconut industry's output is exported and part consumed domestically, part of the value originates in agriculture and part in industry.

Although an intensive study of an individual commodity involves a loss in generality, there are important compensating gains. It is possible to be much more specific about the causes of structural change, the incentives to expand and contract production, and the response to such incentives. In more aggregated work prices are often difficult to incorporate into the analysis because of index number problems, and policy variables may be unmanageable unless they are of the "across the board" variety such as a devaluation. Most policies, however, are directed at specific commodities, and it is only through individual commodity studies that their significance can be analyzed.

The procedure adopted in this section is to describe the structural changes that have occurred in the coconut industry and then to analyze the changes. As it is an export industry, a distinction can be drawn between external and internal factors. Changes in world prices, costs of international shipping, and tariffs, taxes, and quotas levied by importing countries are the major external factors. Some of the relevant internal or domestic factors are costs and prices relative to competing products and domestic government policies.

#### THE STRUCTURE OF THE INDUSTRY 1920-1965

The overall structure of the coconut industry between 1920 and 1965 is summarized in Diagrams III and IV. These diagrams describe the structure in terms of physical input of nut equivalents.

One striking feature of the whole period has been the changing relative importance of the different export products combined with stability in the total share of nuts produced that are exported in one form or another. The share of nuts exported ranged from a low of 86% in 1920 and 1960 to a high of 91% in 1930 and 1950. In contrast to this stability, the share of nuts exported in the form of oil varied from 71% in 1920 to 8.5% in 1960.

The trend toward marked and continuous decline from 1920 to 1960 in the share of total nuts used in coconut oil manufacture and coconut oil exports is of particular interest. In 1920, 85% of the total nut output was used in oil manufacture, and 71% represented oil exports. As can be seen

from Diagram III, these shares fell to 45% for oil manufacture and 33% for oil exports by 1940. In the post-war period the share of nuts used in the manufacture and export of oil fell still further. In 1950, 20% of the total nuts were used in oil manufacture and 11% in oil exports (see Diagram IV). Between 1960 and 1965, however, there was a reversal of this long-run trend as the share of nuts used in oil manufacture and export rose substantially.

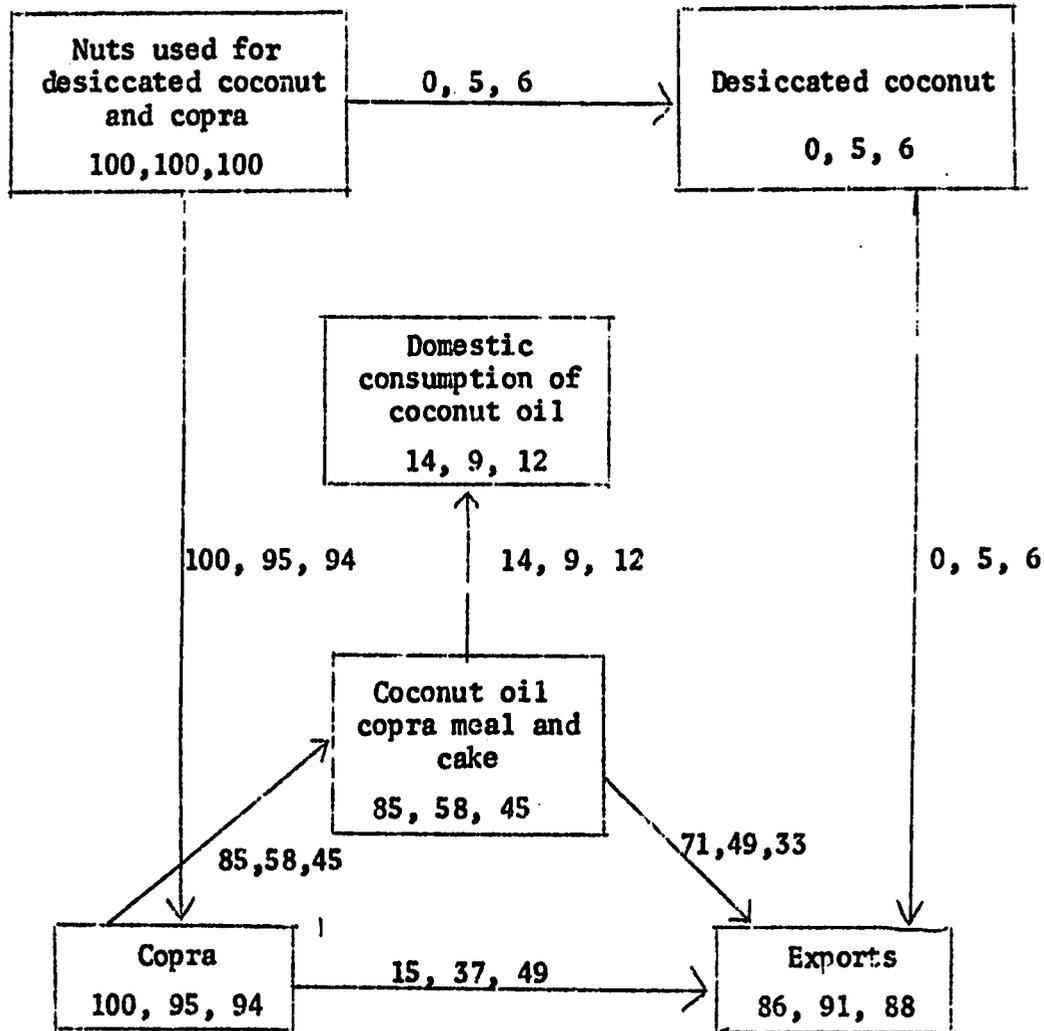
The share of total nuts used in the manufacture and export of desiccated coconut did not show much trend over the period 1930-65. In 1920, the industry was non-existent, but from 1930 to 1965 it used from 5 to 9% of the total nut output.

The trend for the industry as a whole, over the period 1920 to 1960, was just the opposite to that which might be expected in a developing economy. Instead of the industry increasing the degree of processing, there was a marked decline in the share of nuts entering the industrial sector of the industry. In 1920, the processed coconut products, i.e., desiccated coconut, coconut oil, and copra meal, accounted for 85% of the nut output. By 1960 their combined share had fallen to 29% of total nuts used. In terms of the degree of processing of exports, the trend was even more marked. Oil and desiccated coconut exports accounted for 71% of total nuts in 1920 but only 15% by 1960 (see Diagrams III and IV).

This long-run trend towards a progressively more "colonial" pattern of exports was reversed after 1960. Even by 1965, however, oil and desiccated coconut exports used only 30% of the total nuts, compared to 39% on the eve of the war with Japan.

DIAGRAM III

STRUCTURE OF COCONUT INDUSTRY BY  
USE OF NUTS, 1920, 1930, 1940  
(Percentage share of total nuts)

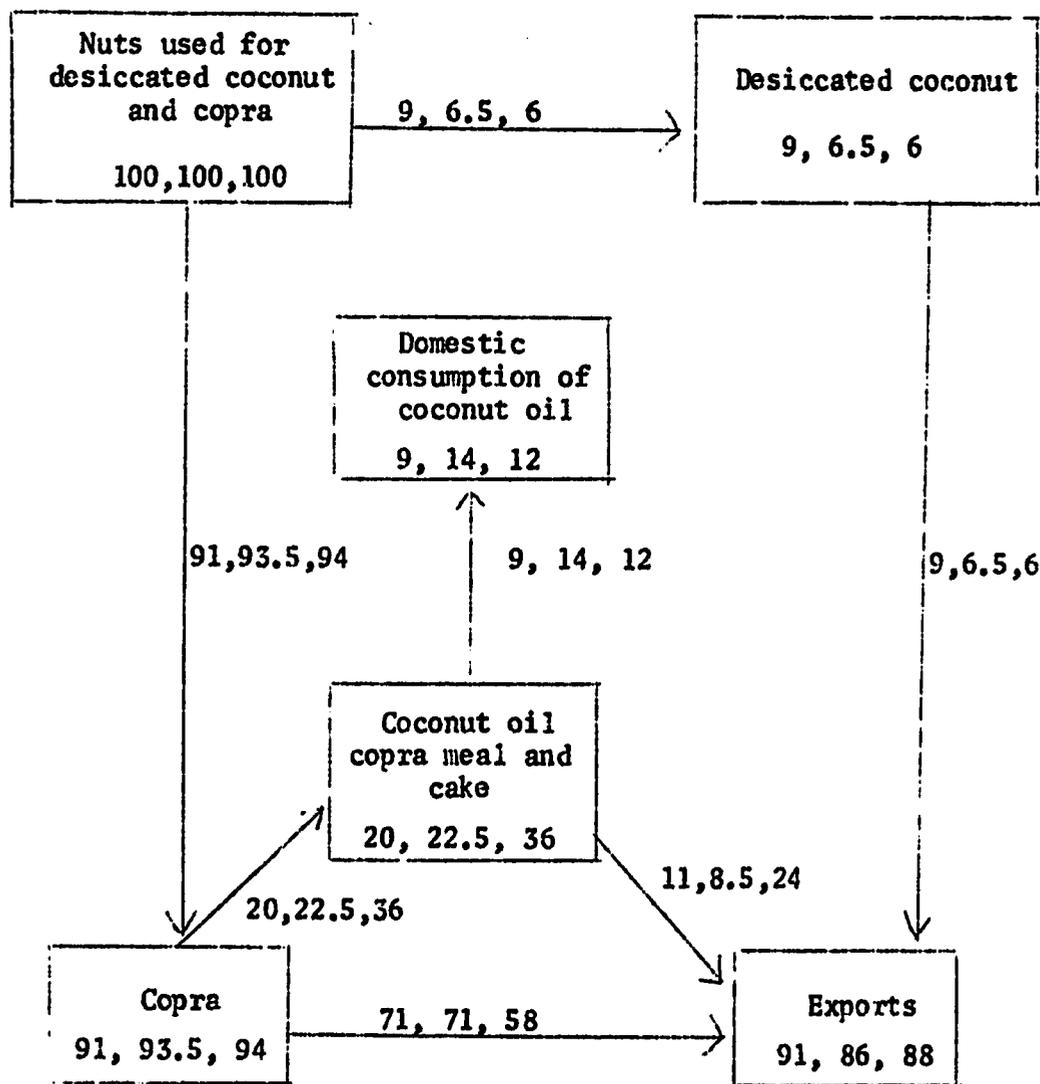


Source: Output of each product was converted into its nut equivalent using the standard conversion ratios.

NOTE: Unlike Diagrams I and II, no distinction is drawn between coconut oil and copra meal because they are joint products. Any decision is arbitrary and in this case all nuts have been allocated to oil production.

DIAGRAM IV

STRUCTURE OF COCONUT INDUSTRY BY  
USE OF NUTS, 1950, 1960, 1965  
(Percentage share of total nuts)



Source: Same procedure adopted as for Diagram III.

This decline in the importance of industrial processing, and the partial recovery in the 1960s, is one of the central features of the industry that must be analyzed. Prior to this analysis, however, it is helpful to view the changing structure of the industry from another aspect.

The decline in the share of nuts undergoing industrial processing suggests, but does not prove, that there was a similar decline in the share of the value of final output originating in manufacturing. What is of greatest interest is not the distribution of nuts as such but the structure of the industry in terms of value. The following questions, for example, can only be answered as a result of expressing the structure of the industry in value terms. What share of the value of the industry's output is added by industrial processing? How has this share changed over the years? What factors have influenced this change?

The answers to the first two of these questions can be seen from Diagram V and Tables 33-36. Diagram V describes the structure of the industry, not in terms of a single physical input, as with Diagrams III and IV, but in terms of value. To construct Diagram V it was first necessary to value the output of the whole industry and its components. Table 33 gives the quantity, price, and value of each export product. Table 34 combines with export value the value of coconut oil consumed domestically which makes it possible to value the output of the whole industry (see Column 4).

The output of the whole industry and all the components are valued at Manila prices. The valuing of nuts and copra at Manila prices means that their prices include the transport margins incurred in moving the

TABLE 33

COCONUT PRODUCTS: EXPORTS  
(Valued at Manila Prices)\*

Year	C O P R A			C O C O N U T O I L		
	Quantity (000 Metric Tons)	Price Resecada (/Metric Ton)	Value (Mil. ₱)	Quantity (000 Metric Tons)	Price (/Metric Ton)	Value (Mil. ₱)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1929	173.6			190.5		
1930	174.3			147.4		
1931	174.2	78	13.6	164.9	184	30.3
1932	137.2	64	8.8	114.7	132	15.1
1933	308.8	50	15.4	159.6	113	18.0
1934	342.7	43	14.7	144.8	109	15.8
1935	252.9	90	22.8	164.2	182	29.9
1936	291.1	109	31.4	158.9	210	33.7
1937	236.5	130	30.7	162.8	240	39.1
1938	342.1			165.1		
1939	190.3			90.0		
1940	402.3			170.1		
-						
1946	387.0	234	90.6	1.5	570	0.8
1947	1,008.4	350	352.9	17.3	800	13.8
1948	586.6	515	302.1	46.6	980	45.7
1949	528.7	317	165.0	61.3	620	38.0
1950	707.2	360	254.6	69.8	680	47.5
1951	775.0	362	280.6	77.8	700	54.5
1952	670.8	240	165.0	80.5	460	37.0
1953	606.9	360	222.1	59.4	690	41.0

TABLE 33

COCONUT PRODUCTS: EXPORTS (Continued)  
(Valued at Manila Prices)\*

Year	C O P R A			C O C O N U T O I L		
	Quantity (000 Metric Tons)	Price Resecada (/Metric Ton)	Value (Mil. ₱)	Quantity (000 Metric Tons)	Price (/Metric Ton)	Value (Mil. ₱)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1954	763.2	308	235.1	65.2	570	37.2
1955	804.8	271	218.1	74.2	480	35.6
1956	966.3	260	251.2	108.9	450	49.0
1957	943.0	284	267.8	97.6	470	45.9
1958	811.9	377	306.1	86.9	650	56.5
1959	681.1	467	318.1	64.6	800	51.9
1960	804.4	399	321.0	59.7	700	41.8
1961	627.5	381	239.1	74.4	660	49.1
1962	779.4	473	368.6	147.6	790	116.6
1963	1,032.7	541	558.7	195.3	880	171.9
1964	910.0	560	509.6	229.4	960	220.2
1965	883.5	654	577.8	235.8	1,140	268.8

\*Exports are valued at Manila prices rather than recorded values in order to be able to derive consistently the value of the output of the industry as a whole. If actual exports were used, coconut oil exports would be valued at an implied price, slightly different to that used to value domestic consumption of oil. Exports valued in this latter way are very similar to the recorded exports shown in Table 28.

TABLE 33  
COCONUT PRODUCTS: EXPORTS (Continued)  
(Valued at Manila Prices)

Year	DESICCATED COCONUT			COPRA MEAL AND CAKE			TOTAL Value (Mil. ₱)
	Quantity (000 Metric Tons)	Price (/Metric Ton)	Value (Mil. ₱)	Quantity (000 Metric Tons)	Price (/Metric Ton)	Value (Mil. ₱)	
	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1929	22.3			113.8			
1930	19.9			89.9			
1931	16.8			98.6	27	2.7	
1932	16.1			75.8	26	10.0	
1933	17.9			99.9	18	1.8	
1934	23.5			99.6	21	2.1	
1935	33.9			101.8	28	2.8	
1936	33.7			108.3	35	3.8	
1937	40.7			110.5	43	4.8	
1938	34.3			129.3			
1939	16.9			54.7			
1940	41.5			118.3			
-							
1946	4.7	880	4.1	5.8	110	0.6	96.1
1947	21.2	900	19.1	27.1	160	4.3	390.1
1948	61.4	940	57.7	53.7	140	7.5	413.0
1949	57.6	680	39.2	65.3	90	5.9	248.1
1950	73.1	660	48.2	62.9	110	6.9	357.2
1951	47.4	670	31.8	65.9	120	7.9	374.8
1952	39.1	530	20.7	78.8	150	11.8	234.5
1953	49.5	670	33.2	63.9	120	7.7	304.0

TABLE 33

COCONUT PRODUCTS: EXPORTS (Continued)  
(Valued at Manila Prices)

Year	DESICCATED COCONUT			COPRA MEAL AND CAKE			TOTAL Value (Mil. ₱)
	Quantity (000 Metric Tons)	Price (/Metric Ton)	Value (Mil. ₱)	Quantity (000 Metric Tons)	Price (/Metric Ton)	Value (Mil. ₱)	
	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1954	45.6	610	27.8	75.4	100	7.5	307.6
1955	48.5	560	27.2	81.4	110	9.0	289.9
1956	48.7	540	26.3	99.7	120	12.0	338.5
1957	54.9	540	29.6	99.2	110	10.9	354.2
1958	51.6	630	32.5	94.3	110	10.4	405.5
1959	49.5	730	36.1	80.8	150	12.1	418.2
1960	58.8	610	35.9	81.5	150	12.2	410.9
1961	59.2	490	29.0	88.6	140	12.4	329.6
1962	62.6	720	45.1	144.1	220	31.7	562.0
1963	70.3	900	63.3	168.1	260	43.7	837.6
1964	69.5	980	68.1	192.5	230	44.3	842.2
1965	67.7	1,050	71.1	181.6	260	47.2	964.9

Sources: Columns 2, 5, 8, 11: 1929-1940 - Annual Report of the Insular Collector of Customs to the Honorable - The Secretary of Finance - for the Fiscal Year Ended December 31, 1929, 1930 ... (Vicente Aldanese - Insular Collector of Customs), Manila: Bureau of Printing.  
1946-1948 - The Philippine Copra Exporters Association Yearbook.  
1949-1965 - Central Bank of the Philippines, Statistical Bulletin, Vol. XVII, No. 4, December, 1965.

Columns 3, 6, 9, 12: 1931-1937 - Annual Report of the Insular Collector of Customs to the Honorable - The Secretary of Finance - December 31, 1937.  
1938-1940 - No data available.  
1946-1965 - Central Bank of the Philippines, Statistical Bulletin, Vol. XVII, No. 4, December, 1965.

product from the farm to Manila. The exclusion of transport margins through the valuing of all products at Manila prices makes it possible to isolate and focus on the margins resulting from industrial processing.<sup>48</sup>

Table 35 shows the share of the final coconut products in the total value of the industry's output. In 1950, for example, exports were 91.4% of the value of the industry's output. Table 36 shows the same thing for some of the intermediate products. In 1950, the nuts that were used in copra were worth 74.3% of the value of the output of the industry. All the unprocessed nuts were worth 81.9% of the total value of production. This means that in 1950 industrial processing contributed 18.1% to the total value of output of the final products. The share in the value of final output of both intermediate and final products is shown in Diagram V.

From Diagram V it can be seen that in 1950 the nuts used for desiccated coconut production and copra were worth 81.9% of the value of the final output. This, of course, is also shown in Table 36. From Diagram V, however, it is possible to trace the flow of nuts and measure the value added through the various stages of processing. In 1950, nuts valued at 74.3% of the industry's output were converted into copra. As copra, they were valued at 82.5% of the industry's output. This means that copra drying contributed 8.2% to the industry's output. Copra valued

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<sup>48</sup>The margins between farm and Manila prices are analyzed in Part III.

TABLE 34

COCONUT PRODUCTS: VALUE OF OUTPUT  
(Million Pesos, Valued at Current Manila Prices)

Year	Exports	Coconut Oil Consumed Domestically	Total Value of Output (2 + 3)
1	2	3	4
1950	357.2	33.4	390.6
1951	374.8	32.8	407.6
1952	234.5	31.5	266.0
1953	304.0	42.4	346.4
1954	307.6	44.1	351.7
1955	289.9	38.2	328.1
1956	338.5	35.8	374.3
1957	354.2	42.3	396.5
1958	405.5	59.3	464.8
1959	418.2	70.5	488.7
1960	410.9	66.1	477.0
1961	329.2	61.4	390.6
1962	562.0	98.5	660.5
1963	837.6	107.7	945.3
1964	842.2	129.0	971.2
1965	964.9	122.4	1087.3

Source: Derived from Table 33.

at 17.3% of the industry's output was converted to coconut oil and copra meal. As oil and meal it was worth 22.3% of final output. That is, oil manufacture added 5% to the value of the industry's product. In 1950, desiccated coconut manufacture can be seen to have added 4.7% to the industry's product. The value of these components must, of course, equal 100, and the slight discrepancies in this diagram arise from rounding. For 1950, for example, we have the following:

Nuts	81.9%
Copra drying	8.2%
Coconut oil and meal	5.0%
Desiccated coconut	<u>4.7%</u>
	99.6%

The value of output was divided between the final products, exports and domestically consumed coconut oil. Exports accounted for 91.4% of the total in 1950 and domestic consumption, 8.5%. This same information and the export components are available from Table 35.

In most respects Diagram V gives a similar picture of structural change to that of Diagram IV based on the use of nuts. There is the same decline in the share of oil exports from 1950 to 1960 and the substantial increase in 1965. The value of output of coconut oil production rose from 22.5% of total output in 1960 to 35.9% in 1965. As a result, total value added through processing increased, and the share of the unprocessed nuts in the value of final output fell from 84.5% to 81.3%.

TABLE 35

SHARE OF FINAL COCONUT PRODUCTS IN TOTAL VALUE OF OUTPUT  
(Percentage)

Year	Copra	Exports			Total Exports	Coconut oil	
		Desiccated Coconut	Coconut Oil	Meal & Cake		Consumed Domestically	Total (6 + 7)
1	2	3	4	5	6	7	8
1950	65.2	12.3	12.1	1.7	91.4	8.5	99.9
1951	68.8	7.8	13.3	1.9	91.9	8.0	99.9
1952	62.0	7.7	13.9	4.4	88.1	11.8	99.9
1953	64.1	9.5	11.8	2.2	87.7	12.2	99.9
1954	66.8	7.9	10.5	2.1	87.4	12.5	99.9
1955	66.4	8.2	10.8	2.7	88.3	11.6	99.9
1956	67.2	7.0	13.0	3.2	90.4	9.5	99.9
1957	67.5	7.4	11.5	2.7	89.3	10.6	99.9
1958	65.8	6.9	12.1	2.2	87.2	12.7	99.9
1959	65.0	7.3	10.6	2.4	85.5	14.4	99.9
1960	67.2	7.5	8.7	2.5	86.1	13.8	99.9
1961	61.1	7.4	12.5	3.1	84.3	15.7	100.0
1962	55.8	6.8	17.6	4.7	85.0	14.9	99.9
1963	59.1	6.6	18.1	4.6	88.6	11.3	99.9
1964	52.4	7.0	22.6	4.5	86.7	13.2	99.9
1965	53.1	6.5	24.7	4.3	88.7	11.2	99.9

Source: Derived from Table 33 and Table 34.

Note: Deviations from 100% in Column 8 are the result of rounding.

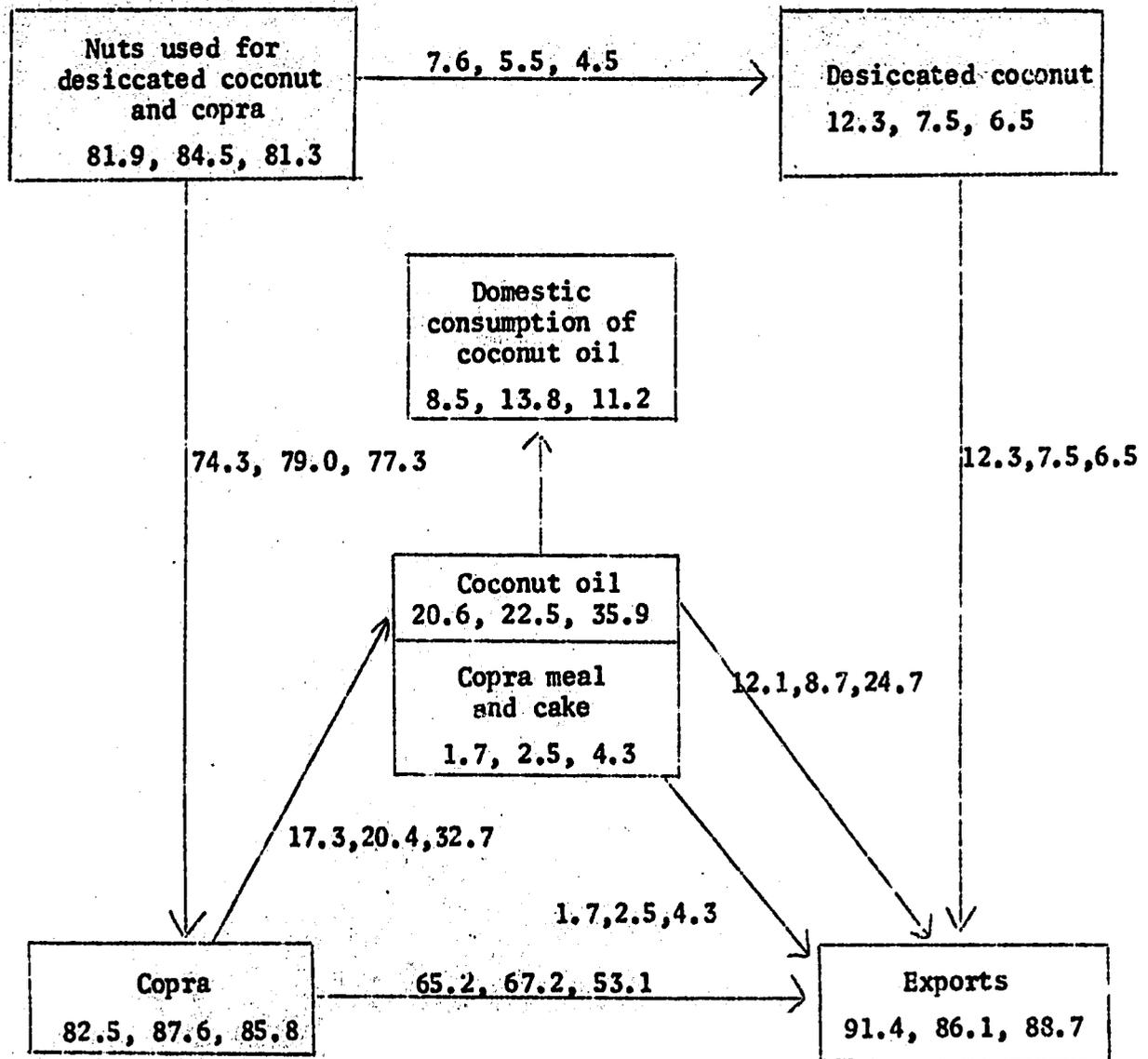
TABLE 36

SHARE OF COCONUTS IN FINAL VALUE OF COCONUT PRODUCTS  
(Percentage)

Year	Nuts Used in Desiccated Coconut	Nuts Used in Copra	Total Nuts (2 + 3)	Processing Share	Total
1	2	3	4	5	6
1950	7.6	74.3	81.9	18.1	100
1951	4.7	77.8	82.5	17.5	100
1952	4.0	75.5	79.5	20.5	100
1953	5.8	75.9	81.7	18.3	100
1954	4.4	78.0	82.4	17.6	100
1955	4.5	78.0	82.5	17.5	100
1956	3.7	79.1	82.8	18.2	100
1957	4.4	80.0	84.4	15.6	100
1958	4.7	79.9	84.6	15.4	100
1959	5.3	79.2	84.5	15.5	100
1960	5.5	79.0	84.5	15.5	100
1961	6.5	78.4	84.9	15.1	100
1962	5.0	78.1	83.1	16.9	100
1963	4.5	79.2	83.7	16.3	100
1964	4.5	77.2	81.7	18.3	100
1965	4.5	77.3	81.3	18.7	100

Source: Derived from Tables 33 and 34.

**DIAGRAM V**  
**SHARE OF COCONUT PRODUCTS IN VALUE OF**  
**FINAL OUTPUT, 1950, 1960, 1965**  
**(Percentages)**



Source: Derived from Tables 34 and 35.

The broad outline of the changing structure of the coconut industry is now clear. The next stage is to analyze the various factors that have influenced this structure. In particular, an attempt is made to see why there was such substantial structural retrogression between 1920 and 1960 and a rapid, but partial, recovery by 1965.

#### PRICES, TARIFFS, AND STRUCTURAL CHANGE, 1920-1960

The decline in coconut oil exports over the period 1920-1960 must first be viewed against the background of the substantial over-expansion of capacity induced by the temporary high level of demand during the first world war. As a result of the war, prices rose rapidly during the years 1915-1920, and oil production responded by rising from a negligible base in 1913 until some 90% of the copra crop was being converted to oil by 1919-20 (see Table 27).

The fall in oil prices in 1921 and their virtual collapse in 1922 resulted in the U. S. Emergency Act of 1921 and the U. S. Tariff Act of 1922. These gave substantial protection to oil producers domiciled in the Philippines by raising a high tariff wall against the entry of oil into the United States that was not of Philippine origin.<sup>49</sup> The tariff of two cents per pound on coconut oil under the 1922 Act amounted to substantial

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<sup>49</sup>See "International Policies, Tariffs, Taxes, and Quotas" in Part I. The tariff of 2.67 cents per pound under the 1921 Act was reduced to two cents in 1922.

protection as the U. S. price of oil at that time was fluctuating around 9-10 cents per pound. Since copra of non-Philippine origin--in contrast to oil--was not subject to a U. S. tariff, the overall effect of the tariff was to favor Philippine coconut oil relative to Philippine copra.

Despite U. S. tariff policy then encouraging the processing of Philippine coconut products, copra gained relative to oil.<sup>50</sup> After the disaster of 1921, oil producers were no longer willing to make substantial additions to capacity. In the case of copra, however, despite the absence of tariff protection, an increasing share of Philippine copra was exported to the United States after 1922. From 33% in 1921 the U. S. market took 74-80% of Philippine copra from 1925 to 1930, reflecting the more rapidly growing size of the U. S. market relative to the European market. The more highly processed product (oil), even with protection, was unable to meet fully the growing U. S. demand in the 1920s, and the export of copra was able to increase its relative share of the U. S. market. The 1922 U. S. Tariff Act also gave decisive protection to another highly processed coconut product, desiccated coconut. The tariff of three and one-half cents per pound, levied on desiccated coconut from Ceylon, proved prohibitive, and the infant Philippine industry was rapidly able to grow to maturity and supply the whole U. S. market.

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<sup>50</sup> From Table 27 it is clear that, although oil exports relative to copra declined relative to the 1918-1920 period, the former remained substantial up to 1940.

The policy of affording special protection to Philippine coconut oil producers and treating them as part of the domestic economy was not to last for long. In the mounting world depression of the early 1930s, U. S. agricultural interests began to clamor for protection against foreign oils which competed with U. S. oils. At that time, coconut oil was used largely for food and was considered a direct threat to domestic agriculture.

In response to these pressures the U. S. Internal Revenue Act of 1934 was passed. This Act was a complicated compromise between the conflicting demands to penalize and protect the Philippine product. The Act provided a tax of three cents per pound on the first users of all imported oils. In the case of the Philippines (but not for other countries) the tax proceeds were refunded to the Philippine government. In addition to the three cents per pound processing tax, a further tax of two cents per pound was imposed on oil not of Philippine origin. This raised to seven cents per pound the excise tax on coconut oil of non-Philippine origin. Although the revenue of three cents per pound was refunded to the Philippine government, it was not subsequently returned to the coconut oil exporters. In effect, non-Philippine oil exporters faced a four-cent liability relative to Philippine exporters. This tariff proved virtually prohibitive for non-Philippine exporters as the U. S. price at that time was 3.5-4 cents per pound.

The three cent per pound processing tax that applied to oil imports from all sources was accompanied by an equivalent copra tax of 1.87 cents per pound.<sup>51</sup> The additional oil tax of two cents per pound which applied to oil of non-Philippine origin was also associated with an equivalent copra tax which amounted to 1.25 cents per pound.

Thus, the 1934 Act taxed equally both oil and copra. In this respect, it neither encouraged nor discouraged the processing of Philippine coconut exports. The Act penalized non-Philippine oil and copra so severely as to reserve the U. S. market for Philippine producers.<sup>52</sup> This substantial preference for the Philippine product did not affect the pattern of Philippine exports. Given the high elasticity of demand for coconut products, preference was not of much relevance. The exclusion of non-Philippine coconut products may have helped U. S. farmers, but it did not help the Philippines to export more of either oil or copra.

Over the period 1920-1940, tariffs and taxes applied by importing countries cannot explain the relative decline of coconut oil exports. The most significant external factor was falling world prices. Investors were unwilling, given uncertainty and adverse expectations, to invest capital in extracting oil--risking another collapse such as occurred in 1921-22.

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<sup>51</sup> Assuming an extraction rate of 62.5%.

<sup>52</sup> On an ad valorem basis the 1934 tariff of 3.12 cents per pound on copra of non-Philippine origin amounted to a rate of 150%. As a result, the Philippines supplied 94% of U. S. copra imports from 1935-40, compared with 60% over the period 1925-34.

There was also an important internal factor which operated in the direction of reducing the relative importance of coconut oil exports. This was the long-run trend in domestic prices that were relatively unfavorable to coconut products. The unfavorable trend in copra relative to rice prices has been shown in Table 29. Coconut oil prices also showed an unfavorable trend relative to the domestic price level, in general.

The underlying reason for this trend was the long-run tendency for world coconut prices to rise more slowly than prices in general. From 1909-1913, coconut oil averaged nine cents per pound on the London market. From 1924 to 1928 the price was generally from 10-11 cents.<sup>53</sup> This is not very different from the 10-15 cents typical of much of the fifties. Philippine coconut prices followed world prices, which assumed a very different course from the domestic price level. Rice prices may be taken as a good indicator of the domestic price level. Over the years 1912-14 the price of a cavan of rice averaged ₱2.6. From 1924 to 1928 the average was ₱4, and in the 1950s it fluctuated between ₱8.5 and ₱12.0. Over the whole period, 1912-1960, the price of rice increased fourfold but that of coconut oil by less than 50%.

In the early years of coconut oil production and up to the crash in 1922, both oil and copra had been extremely profitable. Unlike coconut production, it was possible to expand the output of oil very rapidly in

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<sup>53</sup>K. Snodgrass, Copra and Coconut Oil, p. 218.

order to seize profit opportunities by altering the output mix between copra and the more highly processed product, oil. When the relative price of oil fell, however, production of oil quickly contracted.

#### THE DEPRESSED POST-WAR YEARS: THE COCONUT OIL INDUSTRY, 1946-1960

During the second world war coconut oil manufacturing capacity was almost completely destroyed. In contrast to oil, copra production was able to recover soon after hostilities ceased and benefited from the substantial new planting that occurred in the late 1930s. The interesting problem lies in trying to explain why oil exports performed so poorly throughout the period 1946-1960. Copra exports expanded rapidly after the war and, although stagnant during much of the fifties, their volume was still at a level four times higher than that of the thirties. Coconut oil exports, however, were less than half what they had been in the pre-war period (see Table 33).

The explanation appears to lie fundamentally in the behavior of relative prices. Coconut oil exports failed to recover in the 1950s because of the unfavorable trend in coconut prices relative to other (domestic) prices. The relatively low prices reduced the profitability of exporting both oil and copra. However, the opportunity cost of producing and exporting copra was very low while that of oil was high. In the Philippines of the 1950s there were more profitable avenues in which to invest scarce capital resources than in export industries involving considerable domestic processing. With the exchange rate pegged at the

pre-war level of two pesos to the dollar, it was more profitable to invest in the protected industries producing for the domestic market.

The profitability of oil exports relative to copra was reduced by the widespread practice of overshipment or underinvoicing of copra exports. Such technical smuggling raised the effective rate of exchange for copra exports. It was relatively easy to understate the actual amount of copra exported because of various problems of control. Much of it was exported from small ports and in tramps rather than liners. This made it relatively easy to falsify documents. The export of oil was more subject to control than copra because both the quality and containers were standardized. In addition, it was mostly exported in liners from the major ports. It was this combination of a relatively depressed world market combined with exchange control that depressed coconut oil exports during the decade 1950-1960.

The influence of importing countries' policies on the structure of the coconut industry underwent some changes during this period, but their impact, as earlier, was secondary in importance. In general, the United States continued her pre-war policies into the post-war period, although the refund of the revenue collected by the processing tax was discontinued. The first important change occurred in 1954 with the start of the progressive reduction in the U. S. duty-free quota for Philippine oil. This was not significant in the fifties as oil exports were far below the quota.

The only tariff change that had a significant impact during the decade was the suspension of the three cents processing tax in 1957.<sup>54</sup> Despite this suspension, the export of oil to the United States not only failed to expand but fell substantially between the years 1957 and 1960. In addition to the incentive arising from the abolition of the processing tax, world prices were at very high levels during 1959-60. Despite these incentives, oil exports in 1959-60 fell to a record low level. The major factor in the declining oil exports was the widening gap between the free market and official export rate.

For the 1950s, as a whole, the major factor accounting for the poor performance of oil exports was the policy of maintaining the exchange rate at the pre-war level. U. S. tariff policy, which culminated in the suspension of the substantial processing tax in 1957, should have offered a considerable incentive to expand oil exports. The failure of recorded exports of both products to respond, despite the added incentive of favorable world price changes, illustrates the cost of maintaining an exchange rate for exports seriously out of line with the free market price and the general price level.

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<sup>54</sup>The failure of the United States to protect its own oil industry against foreign competition resulted not from abstract notions of international welfare but from the relative political weakness of the oil extracting firms vis-a-vis the industrial consumers of oil. The lifting of the processing tax is largely explained by the successful lobbying of Procter & Gamble and du Pont. By contrast, the extractors, Cargill, Inc., and Drew Foods, were in a weak position while the Procter & Gamble extracting plant was part of the larger combine whose overall interests lay in obtaining cheap Philippine oil with a lower free fatty acid content than that extracted in the United States.

## THE RECOVERY OF THE INDUSTRY'S INDUSTRIAL COMPONENT

The spectacular increase in coconut oil exports between 1960 and 1965 substantially changed the structure of the whole industry. This increase occurred despite substantial adverse movement in the world price of coconut oil. The U. S. price of 18.3 cents per pound in 1959 fell to 11.5 in 1961 and to 10.8 in 1962.<sup>55</sup> Prices over the three years, 1961 to 1963, were at their lowest for the entire post-war period. Yet coconut oil exports doubled in volume in 1962.

Devaluation played a crucial role in the recovery of the oil industry and occurred in a number of stages. The first three changes were made in April, September, and November of 1960, with the result that the effective export rate of 1960 moved from ₱2.00 to the U. S. dollar to ₱2.50. Further adjustments in March, 1961, raised the export rate to ₱2.75 for the year. The process of devaluation was substantially completed in January, 1962, when a freely fluctuating rate was established and used to convert 80% of the exporters' proceeds. The remaining 20% was converted at the old rate of ₱2.00 to one U. S. dollar. This raised the export rate to ₱3.51, and no further change was made until the final act of decontrol in November, 1965, when the requirement that exporters surrender 20% of their exchange earnings at ₱2 to the U. S. dollar was abolished.

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<sup>55</sup> IMF, International Financial Statistics, Supplement to the 1965/66 issues, p. xi.

For the coconut oil industry the effect of devaluation was to sustain peso oil prices despite a substantial fall in world prices. The impact of devaluation on coconut oil prices is shown in Table 37. Column 3 of this table is the U. S. price converted to pesos at the effective export rate. This correlates closely with the Manila price. That is, the Manila price is largely explained by the U. S. price and the exchange rate. Despite the large fall in the U. S. price from 1959 to 1962, the adjustments in the exchange rate were sufficient to sustain the peso price. But the increase of a little over one-third of the peso price between 1960 and 1964 can hardly explain the almost fourfold increase in exports. Indeed, coconut oil prices between 1960-1964 increased only a little more than export prices, in general (shown in Column 6), and a little less than those of domestic products (shown in Column 7). The increase in the relative price of coconut oil was not sufficient to explain the phenomenal surge in exports after a decade of stagnation. We turn to a new consideration to complete the explanation.

#### COCONUT OIL PRODUCTION: THE ROLE OF RELATIVE OIL/COPRA PRICES

The capacity of the coconut oil industry to expand output very rapidly had been demonstrated in earlier decades. The increase in exports from 16,000 tons in 1916 to 140,000 in 1919 is largely explained by the high world price combined with difficulties of shipping copra during the first world war. Thus, the crucial factors in oil exports (and production) are those determining the price of copra relative to oil. This is because copra accounts for about 80% of the value of the oil and meal produced.

TABLE 37

## COCONUT OIL: PRICES AND EXPORTS AND GENERAL PRICES

C O C O N U T O I L						
Year	U. S. Price \$U.S. (Per 100 lb)	Peso Equivalent (Per 100 lb)	Manila Price (Pesos per 100 lb)	Volume of Exports (1000 M.T.)	General Price Index of Export Products	General Price Index of Domestic Products
1	2	3	4	5	6	7
1958	14.60	29.20	29.24	86.9	120.8	108.5
1959	18.30	36.66	36.36	64.6	136.5	106.7
1960	14.20	35.50	31.81	59.7	133.0	111.8
1961	11.50	31.62	30.00	74.4	138.1	117.4
1962	10.80	37.90	35.90	147.6	167.1	119.6
1963	11.80	41.42	40.00	195.3	200.0	130.1
1964	13.40	47.03	43.63	229.4	194.2	139.2
1965	-	-	-	235.8	201.0	142.8

Source: Column 2 - IMF, International Financial Statistics.  
 Column 3 - Derived from Column 2, using export rate.  
 Column 4 - Central Bank, converted from kilograms.  
 Column 5 - Central Bank, Statistical Bulletin.  
 Column 6 - Central Bank, Statistical Bulletin, Table 112.  
 Column 7 - Central Bank, Statistical Bulletin, Table 113.

A significant fall in the price of the input copra, relative to that of the output oil, results in a substantial increase in profits. The high elasticity of profits with respect to the relative price of oil and copra, reflects the importance of copra as an element in total costs. In the past there have been few technical constraints on the rapid expansion of oil production due to the possibility of working existing equipment more intensively in the short run and the limited time it has taken to import and assemble additional plant.

That profits of the coconut oil industry are highly sensitive to the relative prices of oil, meal, and copra is a necessary result of the known structure of costs. Assuming profit maximization and lack of technical constraints on the expansion of output, it follows that any significant increase in the price of oil/cake relative to the price of copra will result in a rapid increase in the production of oil. The hypothesis proposed here is that most of the major historical fluctuations in the output of coconut oil can be largely explained in these terms.

It is not possible to explain the increase in coconut oil exports over the years 1918-19 in terms of an increase in the absolute price of oil or in terms of its price relative to the general price level. The price of coconut oil increased 13% from 1912-14 to 1919. Most other products, both domestic and export, rose by 100% or more over this same period. Rice, for example, rose from ₱2.6 per cavan to ₱5.6 and abaca, from ₱13.1 to ₱27.7 per picul. For the whole period, 1912-1930, there appears to be no correlation between the exports of oil and the price of oil relative to other export products or the general price level.

There is, however, a very definite correlation between the relative price of oil and copra and the exports of oil over the period 1912-1929. This relationship is shown in Graph 1. The data on which this graph are based are shown in Table 38. Column 3 of Table 38 shows the annual percentage change in the ratio of oil to copra prices. Column 5 is the annual percentage change in the volume of oil exported. In 1915, for example, oil prices increased by 7% relative to copra prices, and at the same time oil exports rose by 138%. A regression of Column 3 on Column 5 yields an  $r^2$  of .42.<sup>56</sup> The relationship between price and quantity is seen most clearly in Graph 1. Coconut oil production is obviously very responsive to changes in the oil/copra price ratio. The elasticity of supply based on a visually estimated line of best fit is 11.<sup>57</sup>

The results, in general, are consistent with the hypothesis that fluctuations in the supply of coconut oil can be largely or, at least, partly, explained by the ratio of oil/copra prices.

#### COCONUT OIL AND RELATIVE PRICES IN THE POST-WAR PERIOD

At first sight the hypothesis breaks down when it is applied to the post-war period. The main feature to be explained is the surge in exports over the years 1960-64 (see Table 39). As can be seen from Table 40, the

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<sup>56</sup>The value of  $r^2$  would have been substantially higher if the year 1921 had been omitted.

<sup>57</sup>In the revised version of this first draft it is planned to expand the statistical treatment of this section and extend the time period to 1940.

GRAPH I  
 THE SUPPLY OF COCONUT OIL  
 FOR EXPORT, 1912-14 - 1929

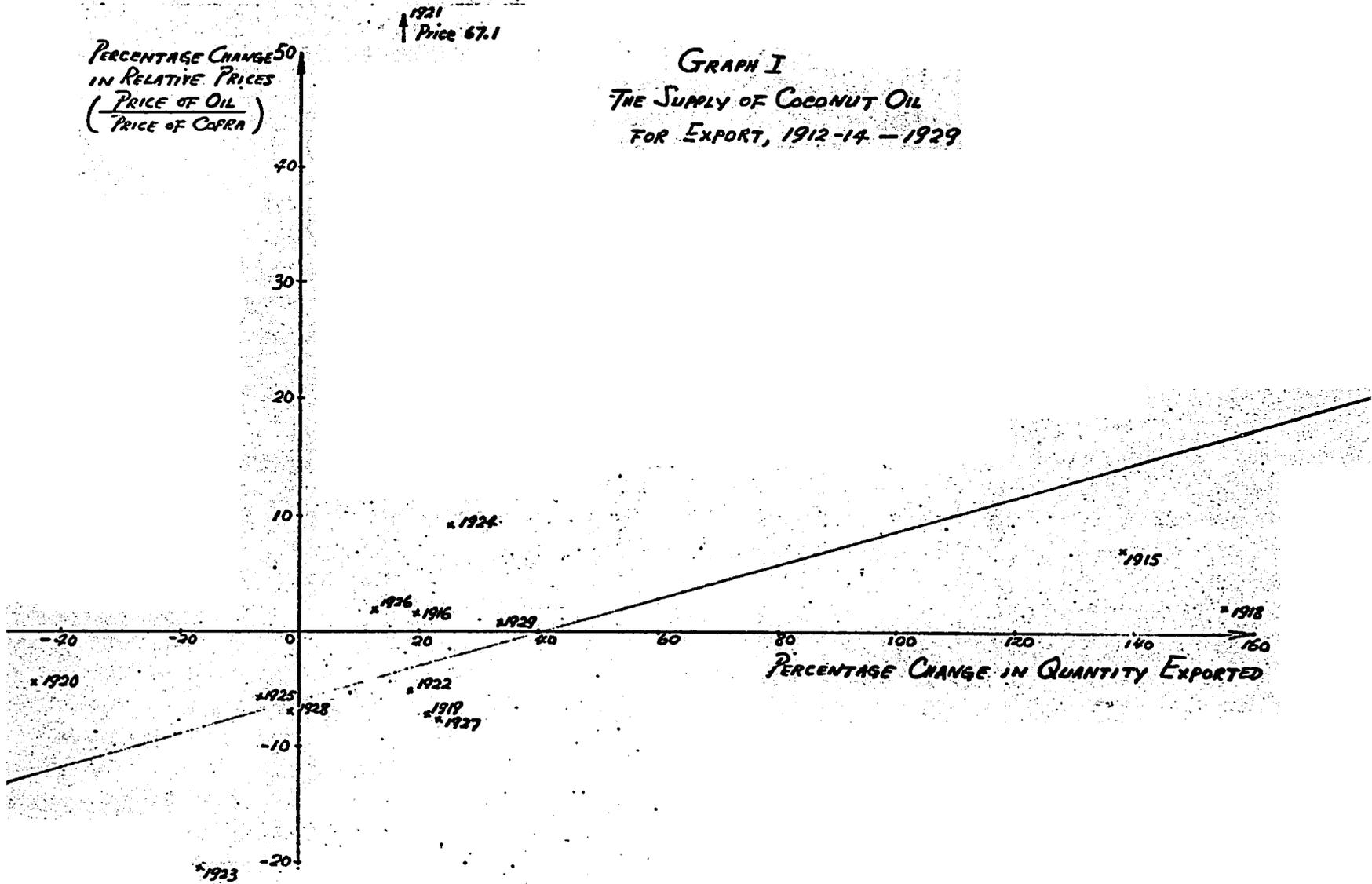


TABLE 38

COCONUT OIL: ANNUAL PERCENTAGE CHANGE  
IN OIL-COPRA PRICE RATIO AND EXPORTS

Year	PRICES		EXPORTS	
	Oil Copra	Percentage Change in (2)	Volume (1000 M.T.)	Percentage Change in (4)
1	2	3	4	5
1912-14	2.878	.	5.65	
1915	3.081	7.0	13.46	138.2
1916	3.128	1.5	16.09	19.5
1917	3.480	11.2	45.20	180.9
1918	3.560	2.2	115.28	155.0
1919	3.299	- 7.33	139.94	21.4
1920	3.141	- 4.7	77.57	- 44.5
1921	5.251	67.1	90.29	16.3
1922	4.982	- 5.1	107.21	18.7
1923	3.959	- 20.5	89.18	- 16.8
1924	4.331	9.3	111.63	25.1
1925	4.080	- 5.7	117.29	- 6.7
1926	4.161	1.9	144.80	12.6
1927	4.459	- 7.4	142.24	23.4
1928	4.149	- 6.9	190.52	- 1.7
1929	4.183	0.8	147.36	33.9

Source: Column 2 is derived from prices quoted in the Philippine Statistical Review.

TABLE 39

COCONUT OIL: PRODUCTION, EXPORTS, AND DOMESTIC CONSUMPTION  
(1000 Metric Tons)

Year	Exports	Domestic Consumption	Total Production
1	2	3	4
1954	65.2	77.3	142.5
1955	74.2	79.6	153.8
1956	108.9	79.5	188.5
1957	97.6	89.9	187.5
1958	86.9	91.3	178.2
1959	64.6	88.1	152.7
1960	59.7	94.3	154.0
1961	74.4	93.0	167.4
1962	147.6	124.7	272.3
1963	317.7	122.4	317.7
1964	363.8	134.7	363.8
1965	343.7	107.4	343.2

Source: Table 55, Appendix.

TABLE 40

## RATIO OF COCONUT OIL TO COPRA PRICES IN MANILA

Year	P r i c e s		Ratio of Prices
	Coconut Oil (100 Kg)	Copra (100 Kg)	$\frac{(2)}{(3)}$
1	2	3	4
1954	57	31	1.8
1955	48	27	1.8
1956	45	26	1.7
1957	47	28	1.7
1958	65	38	1.7
1959	80	47	1.7
1960	70	40	1.7
1961	66	38	1.7
1962	79	47	1.7
1963	88	54	1.6
1964	96	56	1.7
1965	112	64	1.7

Source: Central Bank, Statistical Bulletin, Dec., 1965

ratio of coconut oil to copra prices was stable from 1954 to 1965. These are Manila prices, and the absence of change in the price ratio does not necessarily mean that the same was true in export markets. What it does show is that there was no change in the profitability of producing oil for the domestic market arising out of a change in the relative domestic price of oil and copra.<sup>58</sup>

In practice, however, the Manila prices of coconut products were closely correlated with world prices. From 1950 to 1964, for example, some 95% of the fluctuations in the Manila copra price were associated with fluctuations in the U. S. copra price.<sup>59</sup> The correlation is less close with coconut oil as only 66% of the changes in the Manila price are associated with changes in the U. S. price. In order to demonstrate more decisively the significance, or lack of significance of relative prices, more elaborate calculations have been performed using U. S. prices. Columns 2 and 3 of Table 41 show the U. S. prices of oil and copra cake. Column 4 is the price of a ton of copra plus half a ton of copra cake as this is the ratio in which they are produced. Column 6 is the ratio of

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<sup>58</sup>No attempt is made in this paper to analyze production of coconut oil for the domestic market. One difficulty arises from the unreliable estimates of domestic consumption. See Appendix on Coconut Statistics.

The demand for coconut oil for domestic consumption rose substantially over the period 1950-65 due to increased consumption of cooking oil, soap, margarine, etc. The oil consumed domestically is mostly produced as an intermediate product by the firms which produce the final products.

<sup>59</sup>See Part III.

oil/cake prices to copra. It is obvious that the ratio was extremely stable. From March, 1957, to June, 1965, it varied from a low of 1.60 to a high of 1.72 and showed no trend. This ratio shows quite accurately the alternatives facing a coconut oil manufacturer who is also an exporter of copra. For an exporter only of oil, the relevant variables are the Manila price of copra and the U. S. price of oil. This table is equally relevant because of the very close correlation between the Manila and U. S. price of copra. The conclusion appears inescapable that there was no change in the relative prices of oil/cake to copra and, therefore, that the hypothesis which seeks to explain fluctuations in oil exports in terms of this price ratio is apparently refuted by the evidence.

Before several complicating factors are introduced, it is important to elaborate on some of the factors influencing the oil/copra price ratio. The impressive stability of this ratio is influenced by the competitive nature of the market. There is competition between sellers and buyers of copra as well as between sellers and buyers of oil. If, as a result of any fluctuation in demand or supply, the price of oil rose relative to the price of copra, then competition among buyers for additional copra would soon force up the copra price. If U. S. extractors worked in collusion and attempted to prevent a rise in the copra price, they would lose their source of supply of copra as Philippine copra sellers would sell more to Philippine extractors who would expand output.

As is shown in Part III of this paper, it is safe to assume as a first approximation that the world demand for coconut oil is highly

TABLE 41

PRICE RATIO OF COCONUT OIL/CAKE TO COPRA  
(In U.S.\$ per short ton, Pacific Coast)

Period	Price of Coconut Oil <sup>a</sup>	Price of Copra Cake <sup>b</sup>	Price of Coconut Oil and Copra Cake <sup>c</sup>	Price of Copra <sup>d</sup>	Ratio of Prices (4)/(5)
1	2	3	4	5	6
<b>1957</b>					
March	227.50	57.00	256.00	149.00	1.71
June	220.00	59.00	249.50	150.00	1.66
September	242.50	55.00	270.00	160.00	1.68
December	270.00	53.50	296.75	177.50	1.67
<b>1958</b>					
March	275.00	53.50	301.75	180.00	1.67
June	267.50	59.00	297.00	178.00	1.66
September	290.00	69.50	324.75	201.00	1.61
December	342.50	85.00	385.00	232.50	1.65
<b>1959</b>					
March	380.00	71.00	415.50	255.00	1.62
June	330.00	80.00	370.00	215.00	1.72
September	350.00	68.00	384.00	232.50	1.65
December	345.00	73.00	381.50	237.50	1.60
<b>1960</b>					
March	325.00	70.00	360.00	217.50	1.65
June	250.00	72.00	286.00	172.50	1.65
September	240.00	61.00	270.50	165.00	1.63
December	225.00	61.00	255.50	152.50	1.67

TABLE 41

PRICE RATIO OF COCONUT OIL/CAKE TO COPRA (Continued)  
(In U.S.\$ per short ton, Pacific Coast)

Period	Price of Coconut Oil <sup>a</sup>	Price of Conra Cake <sup>b</sup>	Price of Coconut Oil and Copra Cake <sup>c</sup>	Price of Copra <sup>d</sup>	Ratio of Prices (4)/(5)
1	2	3	4	5	6
<b>1961</b>					
March	230.00	63.00	261.50	157.50	1.66
June	220.00	62.00	251.00	151.00	1.66
September	215.00	63.00	246.50	152.00	1.62
December	215.00	63.00	246.50	149.00	1.65
<b>1962</b>					
March	207.50	73.50	244.25	150.00	1.62
June	200.00	81.50	240.75	146.50	1.64
September	212.50	77.00	251.00	149.00	1.68
December	235.00	77.00	273.50	165.00	1.65
<b>1963</b>					
March	230.00	77.00	268.50	165.00	1.62
June	222.50	79.15	262.07	161.00	1.62
September	235.00	80.00	275.00	170.00	1.61
December	252.50	70.00	287.50	177.50	1.61
<b>1964</b>					
March	245.00	69.00	279.50	172.50	1.62
June	e	e	-	e	-
September	260.00	62.65	291.32	177.50	1.64
December	270.00	60.65	300.32	182.50	1.64

TABLE 41

PRICE RATIO OF COCONUT OIL/CAKE TO COPRA (Continued)  
(In U.S.\$ per short ton, Pacific Coast)

Period	Price of Coconut Oil <sup>a</sup>	Price Copra Cake <sup>b</sup>	Price of Coconut Oil and Copra Cake <sup>c</sup>	Price of Copra <sup>d</sup>	Ratio of Prices (4)/(5)
1	2	3	4	5	6
<b>1965</b>					
March	302.50	e	-	219.00	-
June	300.00	74.15	337.07	200.25 <sup>f</sup>	1.68
September	275.00	74.15	312.07	158.50	1.96
December	270.00	74.15	307.07	173.50	1.76
<b>1966</b>					
March	242.50	79.65	282.32	152.00	1.85
June	235.00	79.65	274.82	148.00	1.85

Source: The Journal of the American Chamber of Commerce of the Philippines, 1957-1966.

<sup>a</sup>F.O.B. price, tank cars in 45-60 days.

<sup>b</sup>C.&F. price per short ton net, in bags.

<sup>c</sup>Price of one ton of coconut oil plus price of half-ton of copra cake/short ton.

<sup>d</sup>C.i.f. price, nearby shipment or afloat.

<sup>e</sup>No data available.

<sup>f</sup>F.O.B. price for copra, from June, 1965, onwards.

elastic. This is because coconut oil has many close substitutes and accounts for only a small part of total fats and oils. The price of coconut oil is therefore given. Competition among oil extractors for copra brings the copra price into a fixed relationship with oil.

Although the ratio of oil to copra prices did not change over the decade 1955-65 in either the United States or the Philippines, for two distinct reasons the effective price ratio did change. The effective, realized price changed as a result of the decline in smuggling of copra and as a consequence of the decline in freight rates for coconut oil.

The outward smuggling of exports existed in the period prior to decontrol because of the incentive arising out of the discrepancy between the free market rate and the legal export rate.<sup>59</sup> After 1962 there was little to gain from the smuggling of exports, and it is reasonable to assume that it decreased drastically. The statistical evidence available supports the proposition that smuggling of exports virtually ceased after devaluation but, without more information than is available, there is no way to measure with any degree of accuracy the magnitude of smuggling prior to decontrol.<sup>60</sup>

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<sup>59</sup> Most of the smuggling of copra was "technical" rather than "outright" smuggling, taking the form of underinvoicing or overshipping of the quantities stated. Often both quantity and quality were understated, and value was correspondingly understated. One problem of estimating the magnitude of the smuggling involved arises from the probability that to some unknown degree the importing countries were also deceived.

<sup>60</sup> See George L. Hicks, "Philippine Foreign Trade, 1950-65" (Washington: National Planning Association, Center for Development Planning, Field Work Report #10, September, 1966) mimeographed.

A comparison of the official exports of copra from the Philippines with the copra imports of some of the major trading partners, however, provides a rough indication of the magnitudes involved. The three largest buyers of Philippine copra are the United States, Germany, and the Netherlands. Together they account for 80-85% of Philippine copra exports.

West German imports of Philippine copra are not available, but total imports from the Philippines are; and as copra accounts for most of the trade, the aggregate figures can be used to approximate the copra trade. It is very clear from Table 42 that, prior to the major measure of devaluation in 1962, recorded Philippine exports of copra to Germany seriously understated actual exports. Assuming that the German import figures are reliable, it follows that substantially more than half the copra exported to Germany between 1950 and 1961 was not recorded in the Philippine statistics. In the two years after devaluation in 1963 and 1964 the discrepancy disappeared. This is a dramatic indication of both the magnitude of the smuggling and the effectiveness of the devaluation in stopping it.

The pattern of Philippine exports of copra to the United States is not quite so clear-cut, but it tells basically the same story. From Table 43 it can be seen that unrecorded Philippine exports of copra to the United States were greatest in the two years prior to the major devaluation step of 1962; i.e., in 1960 and 1961. In 1963 there was very substantial overinvoicing or overstatement of the quantities exported. This was caused by a rather remarkable act of deception on the part of a number of

TABLE 42

PHILIPPINE EXPORTS TO WEST GERMANY  
(Value in Million U. S. Dollars--FOB)

Year	Philippine Exports to W. Germany	W. Germany Imports from the Philippines	Less 10% CIF Charges from (3)	(4)-(2)	Percentage "Error" in (2)
1	2	3	4	5	6
1954	10.7	19.8	17.9	7.2	67.2
1955	9.0	25.5	23.0	14.0	115.5
1956	13.8	45.4	40.9	27.1	196.3
1957	9.3	51.7	46.6	37.3	401.0
1958	11.0	44.7	40.3	29.3	266.3
1959	14.6	30.5	27.5	12.9	88.3
1960	21.1	52.6	47.4	26.3	124.6
1961	17.3	46.6	42.0	24.7	142.7
1962	30.4	44.4	40.0	9.6	31.5
1963	53.3	58.8	53.0	(0.3)	(0.9)
1964	56.0	64.4	58.0	2.0	3.6

Source: George L. Hicks, "Philippine Foreign Trade, 1950-65" (Washington: National Planning Association, Center for Development Planning, Field Work Report #10, September, 1966) Table 16, p. 31.

TABLE 43

PHILIPPINE EXPORTS OF COPRA TO THE UNITED STATES  
(Value in Million U. S. Dollars--FOB)

Year	Philippine Exports to the United States	United States Imports from the Philippines	(3)-(2)	Percentage "Error" in (2)
1	2	3	4	5
1954	50.5	52.6	2.1	4.1
1955	45.1	45.1	0.0	0.0
1956	46.1	41.9	(4.2)	(9.1)
1957	45.3	41.1	(4.2)	(9.2)
1958	54.7	47.4	(7.3)	(13.3)
1959	65.6	66.0	0.4	0.6
1960	49.5	61.5	12.0	24.2
1961	30.9	48.6	17.7	57.3
1962	39.2	46.0	6.8	17.3
1963	45.1	22.5	(22.6)	(50.1)
1964	44.2	43.1	(1.1)	(2.5)
1965	51.7	55.0	3.3	6.4

Source: George L. Hicks, "Philippine Foreign Trade, 1950-65"  
(Washington: National Planning Association, Center for  
Development Planning, Field Work Report #10) Table 20, p. 35.

Philippine exporters. During this period payment for most of any given shipment of copra was based on the documents provided by the exporter and was made prior to the arrival of the copra at the U. S. ports. This enabled a few unscrupulous exporters to be paid for very large shipments of copra, only a part of which actually arrived.

Table 43 suggests that there was substantial smuggling of copra to the United States only during the years 1960 to 1962. The parallel data on the volume of copra trade indicate substantially the same conclusion (see Table 44). Although it is not possible to estimate the total volume of unrecorded exports, it can be said with certainty that the amount involved over the period 1954-62 was substantial, and exceedingly high in 1961. One indirect indication of the magnitude of the understatement of exports in 1961 and their overstatement in 1963 can be seen from the export figures for those years. The fall in Philippine exports from 804,000 metric tons in 1960 to 628,000 metric tons in 1961 is largely accounted for by the increase in smuggling. The 1963 figure of 1,032 thousand metric tons is obviously too large, showing, as it does, an impossibly large increase over the previous years.

The effect of smuggling was to make it relatively more profitable to export copra than to manufacture oil. Smuggling raised the effective exchange rate for copra exports by allowing an exporter to exchange part of the foreign exchange proceeds at the free market rate. In 1961, for example, the legal export rate was ₱2.75 and the free rate, around ₱4.00. If the exporter failed to declare 20% of his cargo, his effective export rate

increased to P3.00. Thus, the returns from copra exporting were significantly improved relative to oil. After the major devaluation of 1962, unrecorded exports of copra virtually ceased and the effective export rate of both oil and copra was P3.50. This increased the profitability of oil relative to copra, but it did not increase the absolute profitability of oil exporting. It explains why recorded copra exports rose swiftly but does not throw a great deal of light on the sudden expansion of oil exports. It certainly encouraged some producers who also exported copra to concentrate on oil exporting, but the effect of this was not sufficient to explain more than a part of the increase.

As was pointed out earlier in this paper, the expansion of oil exports cannot be explained in terms of increased prices and profitability as a result of devaluation. Devaluation barely compensated for falling world prices, as was shown in Table 37. Devaluation and the decline of smuggling were important, but the decisive factor which shifted the balance in favor of oil exports was the decline in international freight rates for coconut oil.

Coconut oil had been traditionally shipped in drums in ocean liners. Up until 1961 the freight rate for shipping a ton of oil from Manila to the east coast of the United States was about \$33 and to the west coast, \$26. The freight rate to Europe was \$28. The introduction of large ocean tankers in 1962 drastically changed the situation. These tankers were built to take up to 14,000 tons of liquid cargo which they could move at a fraction of the price charged by the traditional liners. On the outward journey,

TABLE 44

PHILIPPINE EXPORTS OF COPRA TO THE U. S. COMPARED  
WITH U. S. IMPORTS OF COPRA FROM THE PHILIPPINES  
(1000 M.T.)

Year	Philippine Exports to the United States	U. S. Imports from the Philippines	Difference (3) - (2)	Percentage Difference
1	2	3	4	5
1957	320.3	292.4	- 27.9	- 8.7
1958	314.0	273.0	- 41.0	-13.0
1959	305.8	309.3	3.5	1.1
1960	279.6	344.6	65.0	23.2
1961	217.7	340.9	123.2	56.5
1962	267.5	321.0	53.5	20.0
1963	277.1	142.0	-135.1	-48.7
1964	254.1	248.8	- 5.3	- 2.0
1965	260.4	279.5	19.1	7.3

Source: Adapted from Table 21 of George L. Hicks, "Philippine Foreign Trade, 1950-65" (Washington: National Planning Association, Center for Development Planning, Field Work Report #10) p. 36.

many of them carried tallow from the United States to Japan, and they were able to backload very cheaply with Philippine coconut oil. As a result, the freight rate to the Pacific coast dropped from \$26 per ton to \$9. The freight rate to the east coast dropped from \$33 to \$12 and the rate to Europe, from \$28 to \$17.<sup>61</sup>

At this time the U. S. price for coconut oil was around \$200-\$220, which can be compared with the saving in freight rates of about \$20 per ton. Because of the high price elasticity of world demand for Philippine coconut oil, a substantial expansion of exports was possible without a significant fall in price. Thus, Philippine exporters were able to reap virtually the whole of the gain from the fall in freight rates.<sup>62</sup>

The fall in freight rates of \$20 per ton when the price was \$200 was the equivalent of substantially more than a 10% increase in price. If the price of oil had risen by 10%, then, for the reasons explained previously, the price of copra would have risen by about the same amount. The different effect on profits of a fall in the freight rate and a rise in price is best illustrated by two examples.

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<sup>61</sup>Under the impact of unaccustomed competition, the conference liners were forced to drop their freight rates correspondingly.

<sup>62</sup>The U. S. oil extracting industry bore the full brunt of the falling freight rates. Philippine oil exporters could reduce the price of their product relative to the landed copra price and therefore squeeze the U. S. extractors. The effect was dramatic, as the output of the U. S. extractors fell from 226,000 metric tons in 1961 to 157,000 in 1963. On the other hand, U. S. oil imports rose from 74,000 metric tons to 168,000 over the same period. See Survey of United States and Canadian Non-Food Uses of Coconut Oil (Food and Agricultural Organization of the United Nations, 1966) p. 4, for statistics on U. S. oil production and imports.

Example 1: The effect of a \$20 price increase in oil.

A. Before the price increase.

Price of oil net of freight	\$200
<u>Less</u> cost of copra used	- <u>160</u>
	\$ 40
<u>Less</u> all other costs, fuel, etc.	- <u>20</u>
Profit	<u>\$ 20</u>

B. After the price increase.

Price of oil net of freight	\$220
<u>Less</u> cost of copra used	- <u>176</u>
	\$ 44
<u>Less</u> all other costs, fuel, etc.	<u>20</u>
Profit	<u>\$ 24</u>

Example 2: The effect of a \$20 freight reduction.

Price of oil net of freight	\$220
<u>Less</u> cost of copra used	- <u>160</u>
	\$ 60
<u>Less</u> all other costs, fuel, etc.	- <u>20</u>
Profit	<u>\$ 40</u>

An increase in \$20 in the price of oil resulted in an increase in profits of only \$4 due to the corresponding increase in copra price. The fall in freight rates of \$20 accrued entirely to profits as there was no other increase in costs.

What the fall in freight rates did was substantially to raise the effective oil-to-copra price for Philippine manufacturers. This, in turn, raised profit rates, and rapid expansion ensued. Early expansion was aided by the existence of substantial unutilized capacity, but rapid expansion of plant also took place.<sup>63</sup>

It is possible to measure the approximate change in the effective oil/copra price ratio caused by the fall in freight rates. The relevant price ratio to the Philippine oil exporter is the following:

$$\frac{\text{U. S. oil price less freight rate}}{\text{Philippine copra price}}$$

The U. S. copra price can be substituted for the Philippine copra price because they are very closely correlated. In 1961 the U. S. oil price averaged \$220 per ton and the copra price, \$152, yielding an oil-copra price ratio of 1.44. The same price ratio was maintained in 1964 with an oil and copra price of \$260 and \$180, respectively. Over this period the freight rate for oil dropped from \$26 to \$9, while that for copra was virtually stable. The relevant oil/copra price ratios were therefore:

1961	$\frac{226-26}{152}$	= 1.27
1964	$\frac{260-9}{180}$	= 1.39

This is an increase in the ratio of 9.4%. Over the same period, coconut oil exports rose threefold.

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<sup>63</sup>That expansion of capacity proceeded so rapidly was partly fortuitous. The very large Legaspi Oil Company plant began operations in 1961 and had substantial new capacity in the pipeline by 1962.

At the same time, as freight rates were dropping, the price ratio was also being changed by the decline in smuggling. If, for example, an average of 20% of each copra shipment in 1961 was exchanged at the free rate, then this was equivalent to a price of copra 9.1% higher than previously indicated. The price ratios incorporating both smuggling and freight rate changes then become:

$$1961 \quad \frac{194}{165.8} = 1.17$$

1964            As before.

This yields an overall increase in the effective oil/copra price ratio of 18.8%, half of which is due to freight rate changes and half to the cessation of unrecorded exports. This figure is illustrative rather than an estimate, but it does indicate something of the magnitude of the change in the effective oil/copra price ratio.

The production increases induced by changes in the price ratio were consistent with the previous experience of the industry. From 1915 to 1918 the oil/copra price ratio improved by 16.2% and exports rose 7.6 times. Almost all of the freight rate decline occurred in 1962. The largest decline in smuggling took place between 1962 and 1963. The greatest increase in the effective oil/copra price, therefore, occurred at this time. This caused the increase in oil exports of 99% between 1961 and 1962 and 115% between 1962 and 1963. Changes in the ratio of oil/copra price have created the greatest opportunities for profit which, in turn, have been

successfully seized by the industry.<sup>64</sup>

#### DESICCATED COCONUT PRODUCTION 1950-65

Unlike copra and coconut oil the world demand for Philippine desiccated coconut is quite inelastic. Traditionally, almost the entire Philippine production has been sold to the United States. The Philippines, in turn, has been the sole supplier of U. S. desiccated coconut, the demand for which has depended on the growth of the U. S. population and slow changes in tastes. The long-run expansion of the U. S. market explains the similar growth path of Philippine production.<sup>65</sup>

The analysis of the annual fluctuations in output of the desiccated coconut industry provides an interesting contrast with that of oil and copra. The initial hypothesis is that the industry faces a downward sloping demand schedule for its product and that changes in costs have caused changes in output and prices. The a priori argument in favor of a downward sloping and probably inelastic demand curve follows from the monopolistic position of the Philippines in the U. S. market and the nature

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<sup>64</sup>The speed with which the oil industry has successfully seized economic opportunity and the achievement of the industry in producing an agro-industrial product to compete in world markets is a reflection, not so much of the dynamism of indigenous Philippine entrepreneurship, but of the existence of economic dualism or an enclave of foreign enterprise. See Table 10 for the dominating role of foreign enterprise in the sector.

<sup>65</sup>This statement is only true of the situation until 1961. The substantial growth in exports 1962-65 was due to success in finding new markets. See Table 26B for exports of desiccated coconut by destination.

of the product.<sup>66</sup> Desiccated coconut is not the type product that is consumed in significantly greater quantities when the price is lowered. Neither is it to be expected that sales would be substantially reduced in response to a price increase.

The major cost involved in the manufacture of desiccated coconut is the cost of the coconuts. Table 45, Column 5, shows the value of nuts used as a share of the final product. From 1960 to 1965 the coconuts accounted for around 70% of total costs. The most significant residual cost is labor.

The price of coconuts is basically determined by the price of copra which uses 90-95% of total commercial nut production. In certain areas of Laguna and Quezon, demand from the desiccators does absorb most of the nut production, but the desiccators follow the copra price in setting their own buying prices. If they are short of nuts, they will raise their prices slightly above the price of nuts bought for copra; if they have a surplus, they will edge their price downwards.

When the price of copra rises, the marginal cost of desiccated coconut production rises. Given the assumed downward sloping marginal revenue schedule for desiccated coconut, it follows that production will be curtailed and that the price will rise.

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<sup>66</sup>There is a very low elasticity of substitution between desiccated coconut and its nearest substitutes.

What observations should be consistent with this hypothesis? An increase in the cost of producing desiccated coconut should be closely associated with an increase in price. If a close positive correlation is found between the price of copra--which is used to approximate the cost of production--and the price of desiccated coconuts, it can be argued that shifts in the cost of production have caused changes in price.

The Manila prices of copra and of desiccated coconut are shown in Table 46. A regression yields an  $r^2$  of .85. The close correlation is obvious from the annual percentage price changes of Columns 4 and 5. It appears that from 1950 to 1959, a given percentage change in the price of copra was associated with a somewhat smaller change in the price of desiccated coconut. From 1960 to 1965, however, the reverse was the case.

If it is assumed that on a first approximation the ratio of copra to desiccated coconut price is constant, then this implies a downward sloping demand curve. The price of desiccated coconut is a function of the cost of copra and the slope of the demand curve. The price of desiccated coconut must be dependent on the price of copra because the reverse relationship is impossible due to the virtual insignificance of desiccated coconut compared to copra production.

There is no observable correlation between the increase in price of desiccated coconut and changes in output.<sup>67</sup> If demand is inelastic,

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<sup>67</sup> Throughout this discussion it is assumed that output equals exports and the U. S. price of desiccated coconut is the same as the Philippine price.

TABLE 45  
VALUE ADDED IN THE MANUFACTURE OF COCONUT PRODUCTS  
(Million Pesos)

Year	DESICCATED COCONUT				COCONUT OIL AND MEAL			
	Value of nuts used	Value of final product	(3) - (2)	$\frac{(2)}{(3)}$	Value of copra used	Value of oil and meal	(7) - (6)	$\frac{(6)}{(7)}$
1	2	3	4	5	6	7	8	9
1950	29.6	48.2	18.6	0.61	67.9	87.8	19.9	0.77
1951	19.4	31.8	12.4	0.61	71.6	95.2	23.6	0.75
1952	10.8	20.7	9.9	0.52	58.2	80.3	22.1	0.72
1953	20.3	33.2	12.9	0.61	70.2	91.1	20.9	0.77
1954	15.8	27.8	12.0	0.57	69.7	88.8	19.1	0.78
1955	14.8	27.2	12.4	0.54	66.2	82.8	16.6	0.80
1956	14.2	26.3	12.1	0.54	77.8	96.8	19.0	0.80
1957	17.6	29.6	12.0	0.59	84.5	99.1	14.6	0.85
1958	21.9	32.5	10.6	0.67	106.7	126.2	19.5	0.85
1959	26.0	36.1	10.1	0.72	113.2	134.5	21.3	0.84
1960	26.4	35.9	9.5	0.74	97.6	120.1	22.5	0.81
1961	25.4	29.0	3.6	0.88	101.3	122.9	21.6	0.82
1962	33.3	45.1	11.8	0.74	204.5	246.8	42.3	0.83
1963	42.8	63.7	20.5	0.68	272.8	323.3	50.5	0.84
1964	43.8	68.1	24.3	0.64	323.4	393.5	70.1	0.82
1965	49.8	71.1	21.3	0.70	356.3	438.4	82.1	0.81

Source: Derived from Table 33 and conversion coefficients.

changes in output would be small and may be swamped by small but erratic shifts in the demand schedule. In addition, the data on exports are not as reliable as those on prices.<sup>68</sup>

The conclusion drawn is that exports of desiccated coconut over the period 1950-65 are a function of the outward shifting U. S. demand schedule and that fluctuations in prices were a function of the cost of production. Fluctuations in the cost of production were, in turn, a function of the copra price.

#### STRUCTURAL CHANGE IN PERSPECTIVE

It is now possible to draw a few of the known threads together and view the overall structural change in the industry in the post-war period. The main burden of the discussion has been to show why the different sectors of the industry grew at different rates and how this affected the sectoral origin of the value of the product of the industry.

The structure of the coconut industry, as defined as the share of the major products in the value of final output, is a function of the physical output of each product and its value added. In the foregoing discussion the latter factor was not discussed and was implicitly assumed to be constant. It is not safe to assume, however, that the value added of each product is constant over time and, therefore, the structure is a function of relative levels of output.

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<sup>68</sup>See Appendix on coconut statistics.

TABLE 46

PRICES OF DESICCATED COCONUT AND COPRA  
(Pesos per metric ton, Manila prices)

Year	Copra	Desiccated Coconut	Percentage change in copra price	Percentage change in desiccated coconut price
1	2	3	4	5
1950	360	660	-	-
1951	362	670	-	1.5
1952	246	530	-32.0	-20.8
1953	366	670	48.7	26.4
1954	308	610	15.8	- 9.0
1955	271	560	-12.0	- 8.2
1956	260	540	- 4.0	- 3.6
1957	284	540	9.2	-
1958	377	630	32.7	16.7
1959	467	730	23.9	15.9
1960	399	610	-14.5	-16.4
1961	381	490	- 4.5	-19.7
1962	473	720	24.1	46.9
1963	541	900	14.3	25.0
1964	560	980	3.5	8.9
1965	654	1050	16.8	7.1

Source: Table 33.

Table 45 documents the changing share of value added in the manufacture of coconut oil and desiccated coconut. From Column 5 it can be seen that for desiccated coconut the value of the nuts as a share of total value was substantially less in the period 1950-1957 than it was for the remainder of the period. The same was true, although to a less marked extent, with coconut oil in the period 1950-1956 (see Column 9, Table 45). It is difficult to account for the decline in the share of value added contributed by industrial processing of these products. Assuming that profit rates have remained steady, this assumes that the coconuts and copra share accounted for an increasing share of total costs.<sup>69</sup> The other logical alternative is that profit rates were squeezed.<sup>70</sup>

The relative decline in the prices of the industrial products, oil and desiccated coconut, compared to the prices of their inputs, may well be associated with a trend observed in the economy at large; i.e., an adverse movement in the prices of industrial goods compared with agricultural export products. Both for the economy, in general, and coconut products, in particular, this trend became observable around 1957-8, several years before decontrol and devaluation.

<sup>69</sup> One indirect and perhaps far-fetched piece of evidence to support this proposition is the increased sensitivity of desiccated coconut prices to changes in copra prices after 1960. This is what would be expected if coconuts did indeed begin to account for a larger share of desiccated coconut costs around this time.

<sup>70</sup> Further work could, of course, be done here, both through a direct study of the firms concerned or through a comparison of processed coconut prices with wage rates.

The significance of this trend for the structure of the industry is that it offset to a substantial degree the opposite shift in the physical share of production. In 1950, desiccated coconuts and oil production absorbed 29% of total nuts (see Diagram IV). By 1960 they still accounted for 29% of nuts used, but mainly because of the substantial decline in the industrial processing margins the value of the coconuts used as a share of final value increased (see Diagram V). From Diagram V it can also be seen that by 1965 the value of the nuts--at Manila prices--had dropped to 81.3% as a result of the increased oil production, but this was only a little lower than the 81.9% of 1950. In 1950, however, oil and desiccated coconuts used 29% of the nuts as against the 42% of 1965. Thus, the higher share of nuts used by the industrial sector was offset by the falling processing margins so the contribution of industrial processing to total value added failed to increase significantly.<sup>71</sup>

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<sup>71</sup> Another contributing factor was the decline in relative importance of desiccated coconut production which has a slightly higher value added component than oil.

## PRODUCTIVITY

To understand the process of productivity changes is to solve one of the riddles of development. Important as it is to isolate the major factors encouraging and retarding productivity growth in the coconut industry, it is impossible, given the current state of knowledge, to attempt much more than a hazardous quantitative description of the past course of productivity changes.

At the agricultural level, there is statistical evidence to suggest that there has been a significant long-run improvement in the average yield per bearing tree. Table 47 summarizes the available information on tree yields. According to these data, there was no significant increase in yield over the period 1918-1938.<sup>72</sup> The average pre-war yield was 31 nuts per tree. In the post-war period, the yield increased significantly and averaged 43 nuts per tree over the decade 1956-65. The census figures tell a similar story with an increase from 32 nuts in 1918 to 41 in 1960.

Although relatively little is known about the factors influencing productivity,<sup>73</sup> it is doubtful that the yield increased as substantially as indicated in Table 47. Throughout the period, coconuts were predominantly a smallholder's crop, and there is no evidence independent of the yield

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<sup>72</sup>The 1939 Census figure of 27 is too low due to substantial understatement in the total number of nuts.

<sup>73</sup>See Part I, Factors Influencing Productivity.

**TABLE 47**  
**YIELD OF COCONUTS PER BEARING TREE**

Year	Annual Statistics	CENSUS	Year	Annual Statistics	CENSUS
1	2	3	4	5	6
1918		32	1947	41	
1919			1948	39	36
1920	34		1949	33	
1921	33		1950	37	
1922	29		1951	37	
1923	30		1952	29	
1924	31		1953	36	
1925	30		1954	36	
1926	30		1955	41	
1927	31		1956	43	
1928	31		1957	46	
1929	33		1958	46	
1930	29		1959	46	
1931	26		1960	44	41
1932	27		1961	41	
1933	29		1962	44	
1934	28		1963	42	
1935	33		1964	37	
1936	35		1965	38	
1937	33				
1938	37				
1939		27			

Source: For the primary sources of these data, see sources to Table 56, Statistical Appendix. No data available for years 1940-1946.

statistics to suggest improvement in farming methods or changes in other factors which would influence productivity favorably.

Part of the apparent increase in yield can be accounted for by the southward shift in the geographical distribution of coconut production,<sup>74</sup> The yield per bearing tree in Mindanao is substantially higher than in the rest of the country. The yield in various provinces is shown in Table 48. According to the 1960 census, the yield per tree in Mindanao averaged 51.45 nuts while the rest of the country averaged 37.26 nuts per tree. The average for the Philippines, as a whole, was 41.25.

The share of bearing trees located in Mindanao increased from 12.68% of the total in 1918 to 28.14% by 1960. The increase in yield due solely to this shift in geographical distribution was, therefore:

$$\begin{aligned} & 41.25 - (51.45 \times .1268) + (37.26 \times .8732) \\ & = 41.25 - 39.05 \\ & = 2.2 \end{aligned}$$

Thus, only a relatively small increase of 2.2 nuts per tree can be accounted for by the changing geographical distribution of bearing trees. If the average yield per bearing tree is based on a different census year, or the shift in location is based on the annual statistics rather than the census, then a slightly different result is obtained. Whatever figures are used, however, only a small increase in overall yield is accounted for by the geographical shift in producing areas.

<sup>74</sup>See Part I, Shift in Geographical Location.

TABLE 48  
COCONUTS, MEASURES OF YIELD

Provinces	Nuts Per Bearing Tree			Total Number of Trees per Hectare			Nuts Per Hectare of Bearing Trees		
	1939	1948	1960	1939	1948	1960	(2)x(5) 1939	(3)x(6) 1948	(4)x(7) 1960
	2	3	4	5	6	7	8	9	10
<b>Philippines</b>	27	36	41	132	131	130	3,564	4,716	5,330
Laguna	32	39	41	143	148	135	4,576	5,772	5,535
Quezon	26	34	36	169	170	173	4,394	5,780	6,228
Camarines Sur	19	26	26	125	136	128	2,375	3,536	3,328
Sorsogon	29	38	32	123	121	121	3,567	4,598	3,872
Samar	26	30	38	134	145	136	3,484	4,350	5,168
Leyte	21	35	39	126	126	124	2,646	4,410	4,836
Cebu	25	45	36	138	162	136	3,450	7,290	4,896
Misamis Occidental	39	48	47	119	111	113	4,641	5,328	5,311
Misamis Oriental	36	42	51	124	123	122	4,464	5,166	6,222
Cotabato	24	34	54	108	99	120	2,592	3,366	6,480
Davao	36	56	56	110	114	129	3,960	6,384	7,224
Zamboanga	40	49	47	113	107	116	4,520	5,243	5,452

Source: Calculated from the Census of 1939, 1948, and 1960.

The ideal measure of the productivity of coconut land is not nuts per tree but, rather, nuts per hectare of bearing trees. Table 48 shows both measures of productivity for selected provinces. To some extent the higher yield of nuts per bearing tree in Mindanao is offset by the fewer number of trees per hectare. Nevertheless, in terms of nuts per hectare, as well as nuts per tree, most provinces in Mindanao are more productive than in other areas. The province of Quezon is an exception as yield per hectare is higher than in some provinces of Mindanao because of a very high density of trees which offsets a low yield of nuts per tree. Despite this exception, the number of nuts per bearing tree remains a useful guide to the productivity of coconut land.<sup>75</sup>

The efficiency of the marketing sector of the coconut industry is as difficult to measure as is agricultural yield. The best available measure of marketing efficiency is indicated by the spread between farm level and Manila prices. Table 49 shows the marketing margins for copra. Recorded farm level prices are available only for the years 1957-64. The percentage mark-up between these prices and the Manila price is shown in Column 6. In order to obtain a longer time series, it is necessary to use the aggregate price and quantity data and derive an implicit price. Unfortunately, the mark-up based on this price fluctuates considerably, indicating dubious data (see Column 4).

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<sup>75</sup> No attempt is made to measure the productivity over time of capital and labor because of the inadequacy of the statistical data. The capital involved in coconut growing arises from the long gestation period before the trees bear. The value of invested capital is measured by the value of a given piece of land with bearing trees less the value of the land without the trees. The capital arises as a result of the accumulation of returns foregone during the growing period of the trees.

TABLE 49  
MARKETING MARGINS FOR COPRA  
(Price per 100 Kg., Resecada basis)

Year	Manila Wholesale Price	Farm Level Price (Implicit)	Percentage Mark-up (2) - (3) (3)	Farm Level Price (Actual)	Percentage Mark-up (2) - (5) (5)	Export Price (Implicit)	Percentage Mark-up (7) - (3) (3)	Percentage Mark-up (7) - (5) (5)
1	2	3	4	5	6	7	8	9
1948	51.49	36.90	39.5			52.7	42.8	
1949	31.15	31.36				33.9	8.0	
1950	35.98	27.06	32.9			39.0	44.1	
1951	36.16	39.14				39.5	0.9	
1952	24.63	19.50	26.3			27.0	38.4	
1953	36.62	25.01	46.4			38.5	53.9	
1954	30.72	19.15	60.4			34.0	77.5	
1955	27.12	19.13	41.7			27.4	43.2	
1956	26.02	19.67	32.2			27.7	41.3	
1957	28.43	19.83	43.3	21.00	35.3	27.9	40.6	32.8
1958	37.70	26.76	40.8	28.00	34.6	34.2	27.8	22.1
1959	46.66	21.30	119.0	37.02	26.0	40.5	90.1	9.4
1960	39.92	34.09	17.1	31.70	25.9	43.1	26.4	35.9
1961	38.14	27.44	38.9	30.16	26.4	38.7	41.0	28.3
1962	47.31	30.06	57.3	36.72	28.8	50.8	68.9	38.3
1963	54.09	36.94	46.4	43.18	25.2	57.3	55.1	32.7
1964	56.00	40.00	40.0	43.28	29.3	60.2	50.5	39.0
1965	65.38	43.39	50.6			67.6	55.7	

Source: Column 2 - Table 60, Appendix.  
Column 3 - Calculated from value and quantity data in Table 57, Appendix.  
Column 5 - DANR Unpublished data.  
Column 7 - Calculated from value and quantity data in Table 33.

An alternative to the Manila wholesale price is the implicit export price of Column 7. The mark-up between this price and the two series of farm level prices is shown in Columns 8 and 9.

On balance, it is likely that Column 6 gives the most reliable measure of the marketing margin which appears to be in the 25-35% range. A series long enough to indicate whether there has been any change over time in these margins is not available. Also, cross-section price data at the farm level are not available, but if they were, they would undoubtedly show a large range of prices. Very low prices are received in many remote areas because of the high cost of transport to markets. Because copra is bulky with a relatively low per unit value and production is scattered throughout the archipelago, much of it in remote regions, the problem of transport is much greater than, for example, in the marketing and distribution of rice. It is shown in Part III that there is little evidence to suggest that high marketing margins result from monopoly power. Competition is the more typical case, but the poor state of the roads in many areas and difficulties of inter-island shipping necessitate large margins.

In the industrial sector, the manufacture of desiccated coconut has undergone relatively few changes over a forty-year period while coconut oil manufacture has benefited from substantial technological progress. Most of the changes introduced in coconut oil manufacture have been labor-saving in nature and have reduced costs by lowering the labor-output ratio rather than the capital-output ratio. Technological change has

probably been biased in this direction because research has been directed towards lowering the cost of oil extraction in the developed countries where the relative factor scarcities are the reverse of those in the Philippines.

By contrast, the developed countries have had very little incentive to pursue research on improved methods of manufacture of desiccated coconut because all production was concentrated in the coconut-producing countries. As a result, very little research has taken place, and desiccated coconut manufacture remains relatively labor intensive. If some production of desiccated coconut had taken place in the developed countries, it is difficult to believe that applied technology would not have mastered, for example, the problem of removing mechanically the shell and skin of the coconut.

The history of productivity changes in the coconut industry, as a whole, is typical in many ways of the Philippine economy. At the agricultural level, yields have probably increased only slightly, attributable mainly to a fortuitous and unusual once-and-for-all geographical shift. Marketing margins are high, as a result not of monopoly power but rather poor transport facilities. The productivity of the industrial sector is relatively high and generally rising, but the pattern of technological change has tended to reduce employment rather than expand it.

**PART III**

**PRICE DETERMINATION AND INCOME DISTRIBUTION**

## PRICE DETERMINATION AND INCOME DISTRIBUTION

In 1965 world production of fats and oils was 36.63 million metric tons. Of this total, coconut oil accounted for 6 per cent or 2.22 million metric tons. Among the more important fats and oils are soybean, lard, tallow, and groundnut. For many uses these products are close substitutes for each other. As a result, the world prices of most oils are positively correlated. The correlation is far from perfect in the short run, but over a period of years the major oils show very similar price trends (see Graph 4). Under these conditions it follows that the world demand for coconut oil and copra is rather elastic. Coconut oil is only a small part of total vegetable and animal oil production, and it has a high elasticity of substitution with several products in the general group.

The world price of coconut oil, therefore, is largely a function of the world demand for oils, in general, and the supply of the major oils. World demand for fats and oils is inelastic and stable in the short run. Over the post-war period demand has increased steadily. The fluctuating prices are a result of an unstable supply and an inelastic demand.<sup>76</sup>

Of very great importance are fluctuations in the supply of soybeans and, to a much lesser extent, of groundnuts. In 1959 U. S. production of soybeans fell 8.2 per cent from the 1958 level and production of groundnuts

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<sup>76</sup>The world demand for fats and oils is inelastic because the demand for soap, margarine, etc., is inelastic.

fell 12.5 per cent. In response to this shortfall, oil prices, in general, rose rapidly. The U. S. price for coconut oil in 1959 was 25% higher than in the previous year. In 1960 U. S. soybean production made a modest recovery, but in 1961 output expanded by 22%. The U. S. price of soybean oil began to fall in the second quarter of 1961 and fell almost continuously until mid-1962, when it was nearly 40% below the early 1961 peak. The price of almost all the oils fell steeply over the same period and then, with soybean oil, began to rise in mid-1962. By contrast, changes in the quantity of Philippine copra and oil exported have little perceptible effect on world prices.

The future trend in the U. S. and Manila coconut oil and copra prices is likely to continue to be more influenced by the size of the U. S. soybean crop than by the quantity of copra and oil exported from the Philippines. The exhaustion of U. S. grain surpluses and the relaxation of acreage restrictions may result in the expansion of wheat acreages at the expense of soybean. If this happens on a significant scale, the consequent reduction in the world supply of fats and oils will most probably lead to higher coconut oil and copra prices.

It is not possible here to give anything approaching a rigid analysis of price determination in world oil markets. The purpose here is to indicate rather generally some of the major factors involved. If the argument is accepted that the world price of coconut oil and copra is very largely determined by forces exogenous to the Philippines, then it follows that the Manila prices are largely determined by the world price. The

close correlation between the U. S. and Manila price of copra is shown in Graph 2. The close correlation between the U. S. price of copra and coconut oil can be seen from Graph 3.

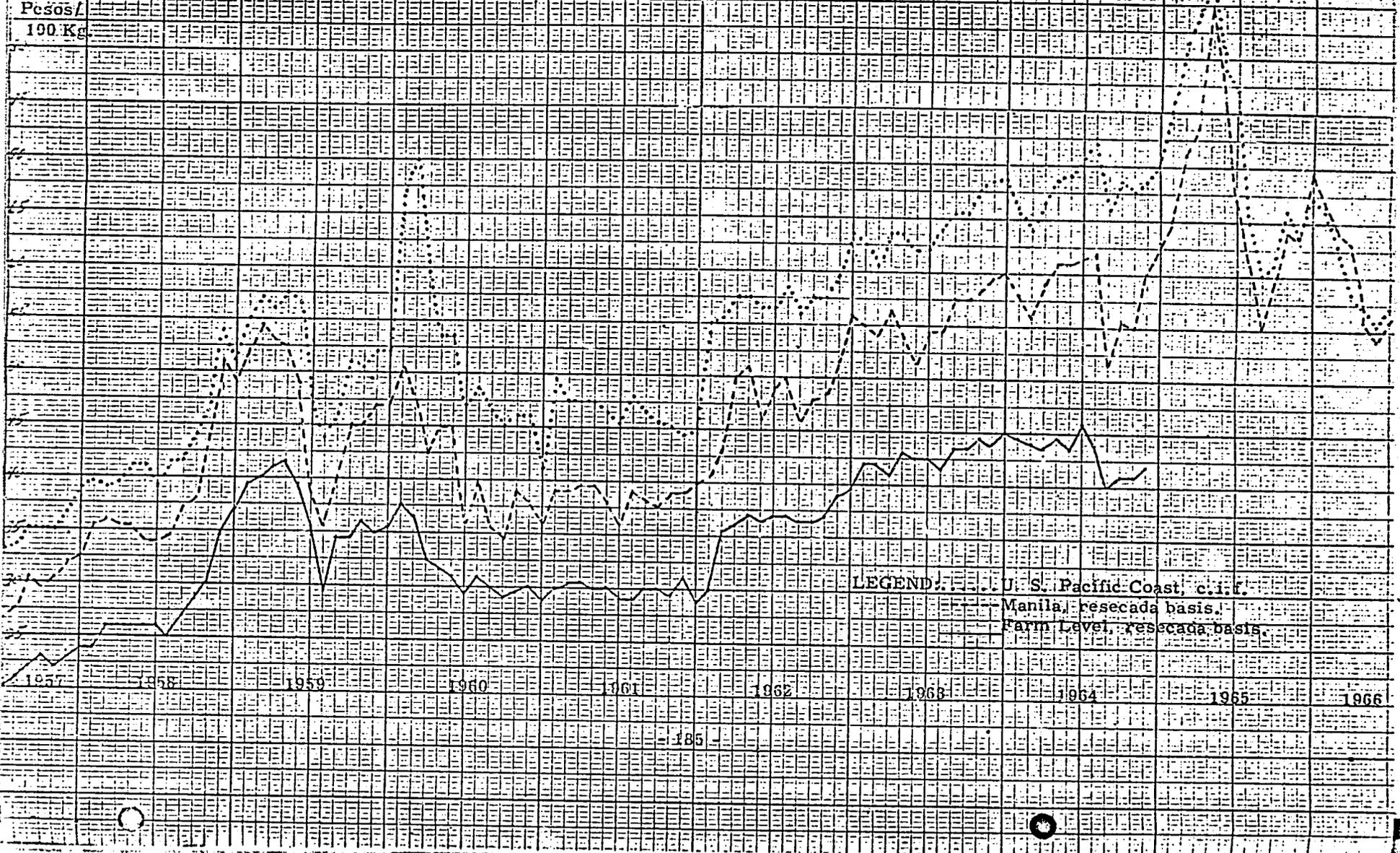
Detailed movements of U. S. and Philippine prices of copra and coconut oil are shown in Table 50. The correlation between Philippine copra and oil prices and the U. S. prices is obviously close. It is substantially closer for copra where 95% of the variation in the Philippine price is associated with variations in the U. S. price. For coconut oil, 66% of the variation in the Philippine price can be explained by variation in the U. S. price.<sup>77</sup>

The close correlation between the prices of the different coconut products and between the same product at different levels of marketing makes it possible to draw a number of conclusions about the distribution of income within the industry. Given the fairly stable value added percentages of each sector and the stable conversion coefficients, the distribution of income between the sectors becomes a function of the relative scale of production of the different products. The value added by each sector of the industry and their share of the total value of output for 1965 are shown in Table 51. This table highlights the essentially agricultural nature of the industry. Only 9.6% of the value of total output was contributed by industrial processing in 1965. This is in contrast to

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<sup>77</sup>Regression of Column 2 on Column 3 yields an  $r^2$  of .948 and of Column 4 on Column 5 an  $r^2$  of .656.

GRAPU-2: COPRA PRICES, U.S., MANILA, AND FARM LEVEL



LEGEND: U.S. Pacific Coast, c.i.f.  
 Manila, resecada basis.  
 Farm Level, resecada basis.

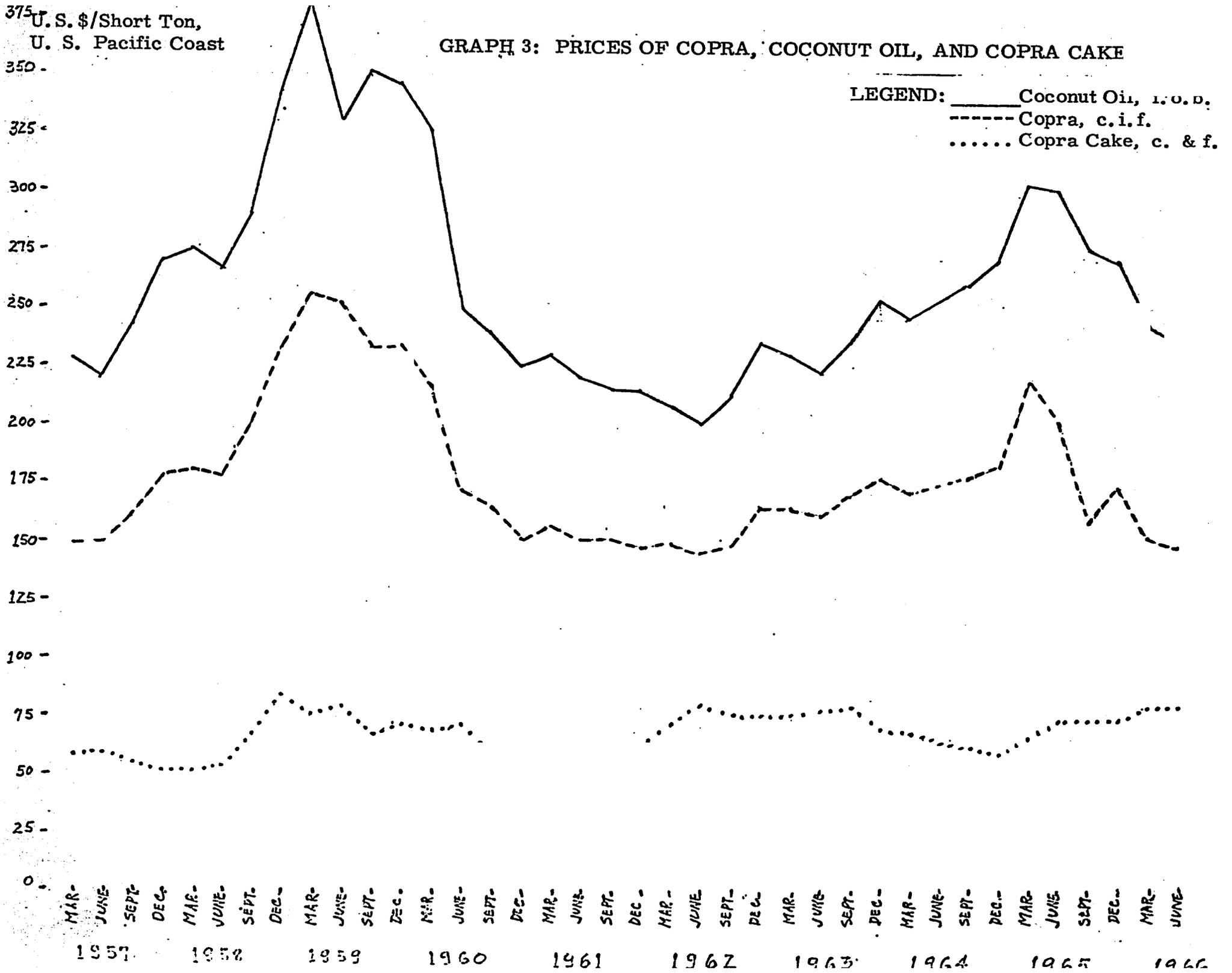
1957 1958 1959 1960 1961 1962 1963 1964 1965 1966

185

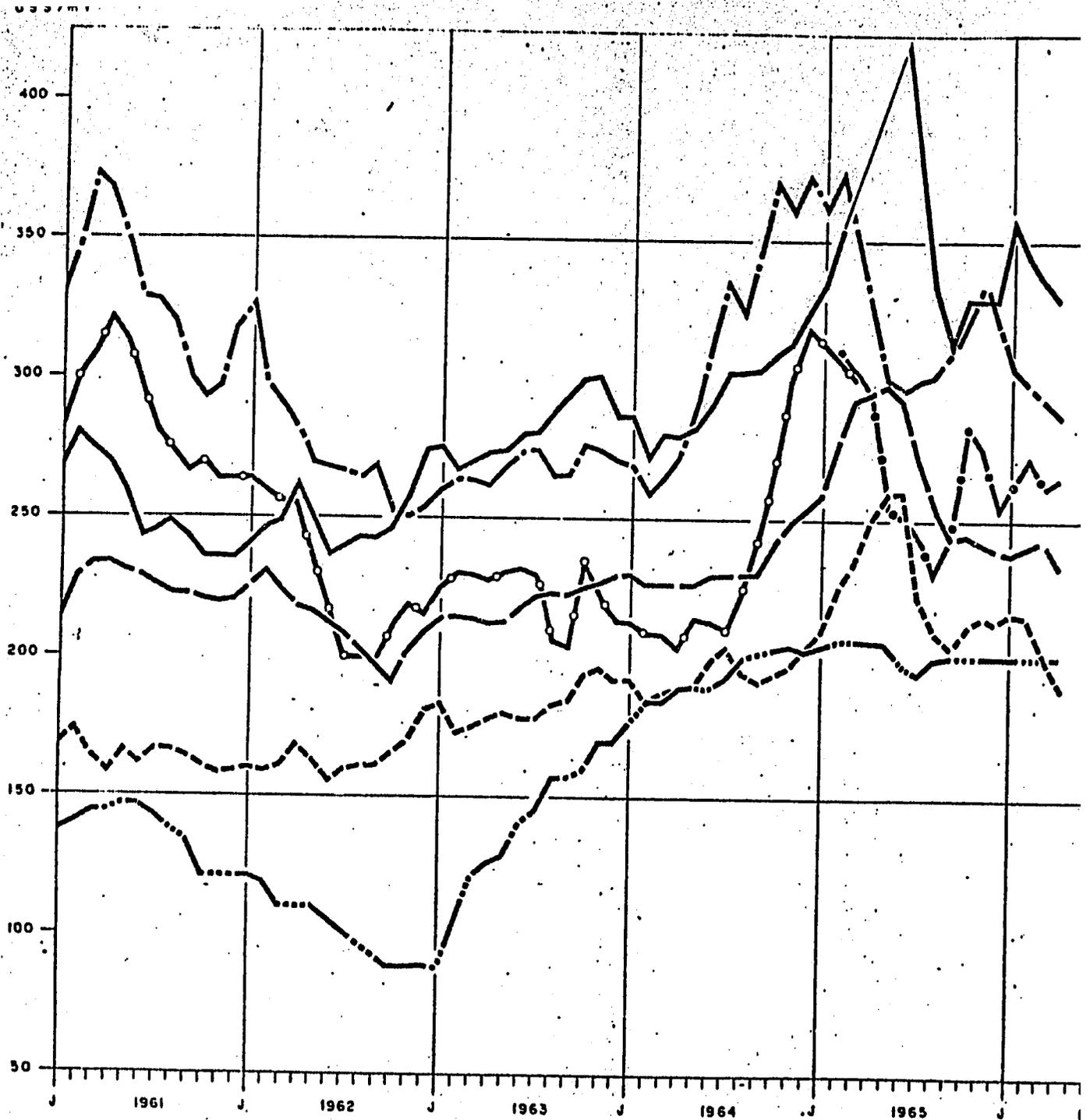
375 U.S. \$/Short Ton,  
U. S. Pacific Coast

GRAPH 3: PRICES OF COPRA, COCONUT OIL, AND COPRA CAKE

LEGEND: \_\_\_\_\_ Coconut Oil, l. o. o.  
----- Copra, c. i. f.  
..... Copra Cake, c. & f.



# Prices of Copra, Coconut Oil, and other major oils.



- Copra: Philippines, bulk, c.i.f. Europe.
- Coconut Oil: Ceylon 1%, bulk, c.i.f. Europe.
- .- Groundnut Oil: Nigerian, bulk, c.i.f. Europe.
- Soybean Oil (A): U.S., crude, bulk, c.i.f. Europe.
- Soybean Oil (B): any origin, ex-tank, Rotterdam.
- Palm Oil: Sumatra 5%, bulk, c.i.f. Europe; from January 1965, Ni
- ..... Fish Oil: Menhaden, crude, tanks, f.o.b. ship, Baltimore.

Source: FAO, Coconut Situation, #15, May, 1966.

TABLE 50

U. S. AND PHILIPPINE PRICES OF COPRA AND COCONUT OIL  
(U. S. cents per lb.)

Year	Copra Manila Price	Copra U. S. Price	Coconut Oil Manila Price	Coconut Oil U. S. Price
1	2	3	4	5
1950	8.16	10.09	15.42	18.38
1951	8.20	10.38	15.87	18.49
1952	5.58	7.58	10.54	13.47
1953	8.30	10.56	15.56	19.40
1954	6.98	8.88	12.89	16.20
1955	6.15	7.92	10.88	14.50
1956	5.90	7.74	10.38	14.20
1957	6.45	7.85	10.66	14.10
1958	8.55	9.82	14.74	14.60
1959	10.58	12.16	18.12	18.30
1960	8.17	9.60	14.33	14.20
1961	6.39	7.83	11.10	11.50
1962	6.24	7.55	10.42	10.80
1963	6.99	8.55	11.50	11.80
1964	7.24	9.02	12.41	13.40

Source: I.M.F., International Financial Statistics. Supplement to the 1965/66 issues, p. xi.

TABLE 51

VALUE ADDED BY SECTORS, THE COCONUT INDUSTRY, 1965  
(million pesos)

Value Added By	Value	% of Total Value
1	2	3
Farm Sector	759.9	69.9
Marketing Sector	222.1	20.5
Coconut Oil & Meal Manufacture	82.6	7.6
Desiccated Coconut Manufacture	21.7	2.0
<b>Total Value Added</b>	<b>1,087.3</b>	<b>100</b>

Source: Share of manufacturing sector from Diagram V. Total value of output from Table 34. Share of marketing sector is based on 1964 farm level prices and the Manila wholesale price of copra as shown in Table 53.

the share of the processed products in the total value of final output, which was much higher. In 1965 the percentage share of oil, meal, and desiccated coconut production in the total value of coconut output was 46.7%.<sup>78</sup> That the value added is so much less reflects the small degrees of processing involved. Of the final value of the oil and meal, for example, some 82-83% of the total is accounted for by the cost of the copra input.<sup>79</sup>

The high share of value added contributed by the marketing or services sector is based on the very high mark-up between the average price of copra at the farm level and the Manila wholesale price. Farm level prices are quite well documented and are shown on a monthly basis (1957-1964) in Table 52 and as a percentage of the Manila wholesale price in Table 53. The implicit farm level prices derived from the annual quantity and value data published by the DANR give a similar result but are somewhat more erratic and presumably less reliable.

Although the share accruing to the marketing sector is very large, this does not necessarily indicate the existence of monopoly or excess profits. The close correlation of the farm level and Manila price indicate that farmers obtain their share of any increase in price. It is the

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<sup>78</sup>Diagram V.

<sup>79</sup>Column 9, Table 45.

observation of a number of people in the industry that the prevalence of true monopsony is unusual even though farmers, in general, prefer to sell their copra to a single buyer. The importance of credit advances, for example, tends to form bonds between buyer and seller.

One fact that indicates the potential existence of monopsony power is the extent to which the sellers of copra outnumber the buyers. The PHILCOA estimate for 1965 is that there were 10,000 barrio buyers of copra and 4,078 town buyers.<sup>80</sup>

In contrast to these 14,000 traders, the 1960 census reported one million coconut producing farms. On 440,000 of these farms coconuts were the major crop. With something like 100 farmers selling coconuts for every barrio buyer, it might be expected that the buyer's position would often be relatively strong. The buyer's position is generally strongest in areas which are poorly served by transport, where it is frequently true that the farmer confronts only one seller.

The disparity between the number of farmers producing copra and the much smaller number of traders is reflected in the average incomes per enterprise. In Table 51 it was shown that the value of output of the farm sector in 1965 was ₱760 million. According to the 1960 Census of Agriculture there were one million farms producing coconuts and 440,000

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<sup>80</sup> See Part I, Table 17.

farms on which coconuts occupied more than 50% of the cultivated area. These 440,000 farms were responsible for 76% of the area under coconuts. If it is assumed that they earned 76% of the farm income, then the average income per farm where coconuts were the main enterprise was ₱1,312.

The gross income of the marketing sector was the value of output of the farm sector plus the value added by the marketing sector; i.e., ₱982 million. Shared among 14,000 domestic traders, this yields an average gross income per trading enterprise of ₱70,000.<sup>81</sup> This contrast in average gross incomes gives no indication of profit rates, but it does contrast the scale of operation and indicate potential differences in market power.

Despite these uncertainties as to the nature of price determination at the farm level, one of the distinguishing features of the industry taken as a whole is the dominance of the competitive element. Competition exists between buyers for the farmer's copra, between and among oil millers and copra exporters,<sup>82</sup> as well as in world markets with other suppliers and other products.

The structure of prices within the industry is primarily determined by the costs of performing the processes involved, while the overall level of domestic prices is determined by the exchange rate and world prices. This is a competitive, export industry and it is also overwhelmingly agricultural.

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<sup>81</sup>This assumes that there is no reselling among traders. This is, of course, not true, but the effect of reselling within the marketing sector is to raise still further average gross incomes.

<sup>82</sup>In the large Laguna-Quezon coconut region the desiccating factories compete with each other for nuts as well as competing with copra as an alternative use for the nuts.

TABLE 52

PRICE OF COPRA PER 100 Kg. RECEIVED BY FARMERS  
(Resecada basis)

Year	January	February	March	April	May	June	July	August	September	October	November	December	Annual Average
	P e s o s												
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1957	20.00	20.00	20.00	21.00	21.00	20.00	21.00	22.00	23.00	22.00	23.00	24.00	21.00
1958	24.00	26.00	26.00	26.00	26.00	26.00	25.00	27.00	29.00	30.00	35.00	37.00	28.00
1959	39.31	40.12	41.13	41.95	39.72	35.61	29.61	34.37	34.84	36.44	35.25	35.88	37.02
1960	37.71	36.98	32.81	31.55	31.22	29.87	31.08	30.40	29.15	29.73	30.39	29.48	31.70
1961	30.26	30.69	30.65	30.16	30.36	29.45	29.49	30.15	30.23	29.93	31.08	29.51	30.16
1962	30.49	35.52	36.17	37.40	36.90	37.36	37.43	36.69	36.79	37.01	39.08	39.80	36.72
1963	42.38	42.15	41.39	43.12	42.88	42.78	41.99	43.79	43.63	44.56	44.08	45.02	43.18
1964	44.85	44.01	43.84	44.67	43.58	46.35	44.02	40.40	41.16	41.12	42.04		43.28

Source: DANR, Department of Agriculture, Prices Received and Prices Paid by Farmers, 1957-1964 (unpublished)

TABLE 53

FARM LEVEL AND MANILA WHOLESALE PRICE OF COPRA  
(Pesos per 100 Kg.)

Year	Farm Level Price	Manila Wholesale Price	(2)/(3)
1	2	3	4
1957	21.00	28.43	.738
1958	28.00	37.70	.743
1959	37.02	46.66	.792
1960	31.70	39.92	.793
1961	30.16	38.14	.790
1962	36.72	47.31	.776
1963	43.18	54.09	.799
1964	43.28	56.00	.773

Source: Tables 52 and 60.

**PART IV**

**THE PAST AND OUTLOOK FOR THE FUTURE**

## THE PAST AND OUTLOOK FOR THE FUTURE

The Philippine coconut industry has had a history of success. Characterized by sustained long-run growth, the output of the industry has hardly ever faltered. Competing openly and freely in international markets, the Philippines first established itself as the world's greatest exporter of coconut products,<sup>83</sup> and then drew steadily ahead of all rivals until she dominated the world's supply of all the major coconut products. In the pre-war, and increasingly in the post-war, period, the major competition to Philippine coconuts came not from other coconut producers but from a wide variety of substitutes. Despite this competition the industry continued to expand and in the early 1960s exports grew at a rate that had been unmatched for forty years.

That this long-run growth path was possible is explained in the first place by the existence of large areas of land almost perfectly suited to coconut growing. Actual growth resulted from many factors. Among the most important were the growth of population and the opening up of productive coconut land. Within the constraints of traditional techniques, the coconut farmer proved well able to seize economic opportunity. In the newly opened frontier regions of Mindanao and the Visayas the farmers

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<sup>83</sup>From 1909-13, Indonesia was by far the largest exporter of coconut products, exporting 546,476 thousand pounds of copra against Philippine exports of 265,087 thousand pounds (see Snodgrass, p. 128). From 1919 to 1924 Indonesia was still slightly ahead in terms of combined oil and copra exports (Snodgrass, p. 94).

opted for coconuts and other commercial crops rather than rice and corn. Of inestimable benefit to the industry was the context of economic stability and non-interference, which encouraged long-run productive investment. Given the absence of any glaring discrepancy between social and private benefit, official restraint from interfering to control prices, distribution, and the allocation of resources to the industry has proved to be a very successful policy. To what extent the successes of the past are likely to be repeated in the future and in what directions conscious human action can be used to improve the industry's prospects are important questions that can only be partly analyzed. With regard to some important policy problems, almost nothing can be said other than to indicate some useful avenues of research.

The future of the coconut industry will depend in the first place on the future course of world demand for Philippine coconut products. The most assured demand is that for desiccated coconut. The development of a substitute product or a change in tastes may both be considered extremely unlikely. It is highly probable that world consumption of desiccated coconut will continue to rise steadily in the coming years. The major element of uncertainty concerns the share of this market that will be held by the Philippines. Since the early 1920s the pattern of trade in desiccated coconut has been for the Philippines to supply the U. S., and virtually only the U. S., market and for Ceylon to supply most of the rest of the world. As the United States accounted for around 60% of world consumption, this was close to the share of world trade held by the

Philippines. The Laurel-Langley Agreement of 1955 foreshadowed a change in this pattern of trade. The agreement allowed for a progressive increase in duties to be levied on the Philippine product until a rate of 1.75 cents per pound was reached in 1975.<sup>84</sup> The Philippines will then be competing on equal terms with Ceylon but, given the high quality of the Philippine product, she should continue to be able to dominate the U. S. market. At the prices prevailing in 1966, a duty of 1.75 cents per pound is slightly less than 15% on an ad valorem basis. This is not a very heavy tariff, but it will increase the attractiveness to the Philippines of non-U. S. markets.

Interestingly enough, the Philippines began to diversify her trading pattern over the period 1962-64 although the U. S. tariff prevailing at this time was only about 3% on an ad valorem basis.<sup>85</sup> This recent success of the Philippines in competition with Ceylon, in some of the latter's traditional markets, argues well for the future of the industry, despite the ending of the U. S. preference.<sup>86</sup>

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<sup>84</sup>See Part I, Table 24.

<sup>85</sup>In 1964 and 1965, 16% of Philippine desiccated coconut was exported to non-U. S. markets. The major markets were Australia, Canada, West Germany, and New Zealand.

<sup>86</sup>The entry of the United Kingdom into the common market if leading to the elimination of her preference for the Ceylon product would open the world's second largest market in the Philippines.

The future world demand for copra and coconut oil is something so complex that it is impossible to do more than indicate some of the straws in the wind. It is a study deserving serious research, yet it has apparently been largely ignored. The major uses for coconut oil are for food, soap, and detergents. The future demand for these and other uses must be analyzed separately because of the different nature of competing products. In addition, the substitutes available in Europe are somewhat different from those in the United States.

By the mid-1960s Europe had overtaken the United States as the major market for Philippine oil and copra. In 1965 twice as much copra was exported to Europe as to the United States, although the latter continued to take most of the oil. In Europe the major use for coconut oil is in foodstuffs; that is, margarine and cooking oil. It is likely that European consumption of coconut oil both for food and other uses will continue to grow. One possible threat is the proposal of the EEC to levy ad valorem duties of 5% on crude coconut oil and 10-15% on refined.<sup>87</sup> This rate is somewhat higher than that levied by the major European buyers (Germany and the Netherlands), but it is lower than that levied by other countries such as France and Italy. On balance, the foreseeable changes in European tariff rates are not likely to affect Philippine exports substantially.

<sup>87</sup> Scheduled to come into effect in 1968.

In the United States the future potential for Philippine exports is significantly different. The U. S. pattern of end uses is rather different from the European. Food uses are much less important, accounting for only 35% of the total, while detergents use a similar quantity. About 20% of the oil is used in soap manufacture; and the remaining 10% is spread over a wide variety of uses, the most important of which are cosmetics and oil additives.

The future for food uses in the United States is similar to that of Europe, but soap, and especially synthetic detergents, face a less certain future. For the manufacture of toilet soap there is no known satisfactory and economic substitute for coconut oil, but U. S. soap production has declined substantially due to the competition of detergents in non-toilet soap uses.

The recent introduction of petroleum-based derivatives has opened a new dimension of competition for coconut oil in the manufacture of detergents. So serious is the threat considered that a recent survey prepared for the FAO<sup>88</sup> predicts a very sharp fall in U. S. non-food uses of coconut oil. In particular, oil used in the manufacture of detergents is expected to decline from 118.0 thousand metric tons in 1965 to 30 thousand tons by 1975.<sup>89</sup> The great advantage of petroleum-based derivatives is that the quality, supply, and, above all, the price are very stable. The

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<sup>88</sup> Roger Williams Technical and Economic Services, Inc., Survey of United States and Canadian Non-Food Uses of Coconut Oil. August, 1966.

<sup>89</sup> The major factor in the expected decline in the use of oil is the decision of Procter & Gamble to switch to the use of synthetic fatty alcohols which are already used by Lever Brothers and Colgate-Palmolive.

occasional periods of high prices for coconut oil have had a ratchet-like effect. High prices stimulated research and investment in competing products so that when the price of oil fell, demand for coconut oil for non-food uses did not recover to previous levels. Once new investment in a competing product had been made, production continued so long as prices were greater than marginal costs.

However, even if this pessimistic forecast is fulfilled, the anticipated loss in the U. S. detergent market is equivalent to a fall in Philippine exports of only 7%. There is no indication that a similar process will occur in Europe or even in Canada, and the expansion of the European market, in particular, and the food market, in general, may well more than compensate for contraction in the vulnerable detergents field.

In general, however, there are now so many substitutes for coconut oil in so many uses that sustained periods of high prices are less likely to occur.<sup>90</sup> The industry may have to adjust to prices that are somewhat lower than those averaged over the decade 1955-65.

#### POLICY IMPLICATIONS

If this prognosis of demand proves valid, then the main problem facing the Philippine industry will be that of reducing costs. Faced with an elastic demand and prospects of a slowly falling long-run price, the industry should be exploring avenues of cost reduction. The analysis of

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<sup>90</sup>High prices have been caused in the past and may be caused in the future by a shortfall in the total supply of all fats and oil. Given the inelastic world demand for fats and oils, the price is highly responsive to changes in supply.

this paper suggests three major areas with cost-reducing potential. These relate to agricultural productivity and the manufacture and marketing of copra.

That it is possible to say so little about the problems and potential of reducing costs is a reflection of the lack of research and knowledge. There is an alarming contrast between the resources, research, and investment applied to the problem of reducing the cost of synthetic oils and the general neglect of the really substantial cost-reducing potential of natural oil.

The potential for raising the agricultural productivity of the industry is undoubtedly considerable. One indication of the potential of the known technique is the very much higher yields on the well run plantations compared with the typical smallholding.<sup>91</sup> This is a result primarily of wider and more regular spacing, better cultivation practices, and use of fertilizers. But there is little chance that the smallholders will adopt improved techniques. Policy making at the agricultural level would be most productive if it was directed towards encouraging the expansion of plantations rather than smallholdings. The most dynamic and productive plantations are in Mindanao, and research should be directed towards exploring the constraints that are preventing their more rapid growth. The shortage of roads is likely to prove to be a significant factor.

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<sup>91</sup> Well run plantations usually have yields some 50% higher than typical nearby smallholdings.

Apart from encouraging the spread of known agricultural techniques, it is vital to carry out new basic agricultural research. Compared with the amount of work that has been done on rice, coconuts are a virgin field. Apart from research on the determinants of productivity using existing species, the potential gain from the development of new species should be more widely recognized. A breakthrough comparable to the high yielding rubber trees would have a similar revolutionary effect on the industry's future.<sup>92</sup>

Policy making in the Philippines has been directed only to a limited extent to raising productivity at the agricultural level. Apart from a number of minor projects, such as the PHILCOA seedling nurseries, almost all the effort has gone into attempts to control the cadang-cadang disease. This disease is a serious problem only in the Bicol region; and as it is more prevalent among older trees, it does not seem to be a serious threat to warrant the disproportionate amount of attention it receives.<sup>93</sup>

The next major area of potential cost reduction arises from the low average quality of Philippine copra. Exporters and oil mills require high quality copra, but much of what is produced is of a very low grade. Despite the preference of the end users for the high grade product, it is

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<sup>92</sup> Even the development of a shorter tree with the same yield would be an immense help to the industry.

<sup>93</sup> According to Uichanco, Philippine Agriculture, p. 238, 6 million trees in the Bicol provinces are affected by the cadang-cadang disease in varying degrees of severity. This is about 3% of the total number of trees in the Philippines.

generally alleged that the producer has no incentive to produce quality copra. He is reported to believe that whatever quality of copra he produces, the price is the same. It is obviously important to know as a guide to policy making if this is true. At first sight it seems surprising, because if the end users are willing to pay a substantial differential for the high grade copra, then, assuming competition and profit maximizing behavior, this differential should be reflected in higher income at the farm level.

It is easiest to obtain information from the end users and at this point in the marketing chain there is no doubt that quality copra is at a premium. The usual policy is to buy only resecada grade copra; but if buen corriente is purchased, it is at a discount of 10%. For semi-resecada the price is 5% below that of the resecada level, while bodega resecada, the highest grade copra, commands a premium of 2% above the resecada price.<sup>94</sup> It would be interesting to know what was the premium and discount for the different grades of copra at the next and subsequent levels of marketing. From the little information that is available, it often appears to be the case that the producer does get paid a premium for good copra but that resistance to improving the quality of copra grown continues. Lack of storage space appears to be one reason explaining why farmers often have to sell their copra before it dries properly to be considered higher grade.

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<sup>94</sup>This information on purchasing premium and discounts was obtained from a Manila oil mill and a large copra exporter.

The farmers' urgent need for cash may also explain their tendency to sell copra immediately even though it brings a lower price.

Improving the quality of copra is a very complex and difficult matter. Since the analysis of this paper was not focused on farm level problems, detailed policy recommendations are hardly appropriate. It is apparent, however, why the Moisture Meter Law did not succeed in raising the quality of Philippine copra. Quite apart from the difficulties of operating the meter, the crucial flaw was that there are apparently various obstacles preventing the farmer from producing high grade copra. Even if storage facilities were available, it may be that the farmers' rate of time discount exceeds the discount on inferior copra. The problem appears to be not so much ignorance as to the quality of copra but, rather, a lack of incentive or ability to produce the high grade product.

The sector of the industry where there is probably the greatest potential for reducing costs is in the marketing and transportation of copra. The potential is shown by the very great variation in farm level prices from place to place due to difficulties of transport. The problem of transporting copra may be divided into two parts: (1) the movement of copra from the producing area to the primary concentration point and (2) the movement of copra from the primary concentration point to the oil mill or export port. The latter movement does not usually involve serious problems. Inter-island transport is quite good, and the copra moves efficiently to end users. The movement of copra from the farm to the first warehouse is a much more difficult problem. If the roads are bad, as they

usually are, the charges levied by the trucker may be of the order of ₱10 per 100 Kg for a 30 Km distance. If alternative water transport is available, the equivalent cost will be much less than one peso. Consequently there is a tendency to use water transport even though the distance and time involved is much greater. A farmer will often prefer to ship his copra 100 Km by water rather than move it 10 Km by road. This excessive use of water transportation frequently makes the producer dependent on a single buyer; i.e., the operator of the boat who calls to pick up his copra.<sup>95</sup>

The Stanford Report on Domestic Transportation, which analyzed the problem of copra transportation, concluded that:

"the major need for improvement in transportation...is improvement and new construction of roads....In the eastern Visayas, (and) northern and eastern Mindanao, the problem of excessive use of water transport is most serious and the need for road improvement based on copra movement is the greatest of any of the six copra regions."<sup>96</sup>

An improvement of the road system in copra producing regions would have two major effects. It would lower the cost of transport but, equally important, it would widen the market for the producer. Lower transport costs and the development of alternative outlets will substantially increase farm level prices and improve the capacity of the industry to survive even at lower world prices. It would also encourage new planting and the opening up of areas for production.

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<sup>95</sup>The strong possibility that farmers would often be faced by a single or, at least, very limited number of buyers was indicated by the contrast between the large number of farmers and relatively few traders (see Part III).

<sup>96</sup>Stanford Research Institute, An Economic Analysis of Philippine Domestic Transportation, Vol. 11, pp. 151-2.

The official policy makers have viewed the marketing and transportation problem in quite a different light. Acting on the assumption that the problems are the result of the exploitation of the grower at the hands of the unproductive middleman, they have advocated, not the reduction of costs and widening of markets, but the redistribution of income in favor of the producer. The policy by which this was to be achieved was essentially that of legislative fiat, as with the Moisture Meter Law or, by the replacement of the existing marketing system with a cooperative which in some way will enable the producer to sell directly to the end user. The latter is a proposal or plan rather than a working policy, and the attempted increase in prices by legislative fiat was never successfully implemented. These policies are interesting not so much for the effect they have had on the industry but, rather, as an indication of an approach to the problems and as a guide to how the policy makers analyze the functioning of the industry.

Apart from cost reducing policies there are several other aspects of the industry deserving close attention. The future growth potential of the industry is one such aspect that appears to have attracted hardly any attention. This is due to the lack of land utilization studies. There is no way of knowing what is the potential of agricultural expansion, in general, or of general expansion potential, what part is likely to prove most suitable for coconuts.

Research on better methods of producing oil is an area in which a limited amount of progress has been made. Among the interesting projects

is a process that extracts oil directly from the coconut and a chemical treatment of nuts that protects the kernels from molds. This results, so it is claimed, in a high grade copra that is not easily subject to spoilage loss.

Research on improved methods of producing copra and oil has primarily been left to the private sector and the FAO. PHILCOA, representing the policy of the government, has concentrated its research on the development of by-products. This research has not yielded any economically significant results. The only valuable by-product produced is coconut shell charcoal exports which were about \$150,000 in 1965. The emphasis of PHILCOA has been on the development of manufactured by-products which is seen as part of the process of "industrializing the industry.

It is surely a mistake to concentrate research on by-product development rather than on improving the major products. There is a high level of world demand for coconut oil but very little for fibre mats and carpets. Not to use fully the by-products of the coconut is not to waste very much; they are simply not very valuable. There are many more important priorities than attempting to build a manufacturing industry on the basis of fibre, husk, and shell.

Another direction by which it is proposed to industrialize the industry is the building of a coconut chemical complex. This plan and the other government policies were outlined in the section on Domestic Policies in Part I. It is difficult to see the justification for

subsidizing this sort of development. If there are really such gains to be made by the manufacture of the derived chemicals, why hasn't the present industry produced them already? The oil industry is certainly not an infant industry. The present utilization of oils is in the hands of firms, such as Philippine Refining Company and Philippine Manufacturing Company, that have easy access to capital and the latest technology. As was shown in Part II, the oil industry has proved capable of expanding output rapidly if profit incentives warrant it. It could be argued that the external economies the project will generate will make it socially desirable, but these are not the grounds on which it is being advocated. This is not an argument against industrialization, in general. It is an argument against a form of pseudo-industrialization that is likely to reduce the industry's export earnings. The potential of the nation as a whole to industrialize would be increased as a result of concentration on the expansion of the traditional coconut exports which would earn the foreign exchange needed for sound industrialization.

There are two aspects of the actual and proposed policies relating to foreign trade in coconut products that deserve comment. It would be worthwhile to explore the possibility of the Philippines becoming a transshipment point for Indonesian copra. The present prohibitive import tariff of ₱50 per 100 Kg prevents the legal import of copra, but a substantial volume of copra is smuggled in and re-exported as Philippine copra. It is much easier for Indonesians in Sulawesi to smuggle their copra to the Philippines in Philippine boats than it is to export their

copra legally. One difficulty that would arise if the Philippines did become a legal transshipment point is inherent in the different U. S. tariff that applies to copra of Indonesian origin.

The other aspect of trade policy concerns the proposal of the Philippine section of the Philippine-Indonesian Coconut Commission. The proposal of the Commission is to cooperate with Indonesia in attempting to control the price of copra.<sup>97</sup> If the analysis of Part III is at least an approximation to reality, then the attempt of the copra exporters to raise the price, presumably by restricting the supply, cannot succeed. the demand for copra, in general, is elastic, the attempt to raise the price will succeed only in reducing the quantity sold.

Given the place of coconut oil in the world market for fats and oils, the industry should be thinking not of contraction and price raising but of expansion and the reduction of costs and prices.<sup>98</sup> The competition that coconut oil faces is more than a threat to the industry; it is also an opportunity. Given the capacity to reduce costs and expand production, the market is available for almost limitless expansion.

<sup>97</sup> See the section on Domestic Policies, Part I.

<sup>98</sup> A further reason for policy emphasis on reducing costs arises from the scheduled increase in U. S. tariffs on Philippine coconut products under the Laurel-Langley Agreement which will reduce the effective price for the Philippine product.

## CONCLUSION

Although it necessarily entails considerable simplification, an attempt is made here to summarize some of the major arguments of this paper and draw broad conclusions about the industry as a whole.

The coconut industry is an important segment of the Philippine economy and a major part of the export sector. Although it is overwhelmingly an export industry, selling abroad some 90% of its output, production of the major product, copra, is an integral part of the domestic, agricultural economy. Grown widely, typically on very small holdings, and always by indigenous Filipinos, copra production is very much part of the traditional, smallholders' economy. Copra is a commercial crop produced in the heart of the "traditional economy"<sup>99</sup> but is marketed in a "transitional sector." The transitional nature of marketing refers to the fact that the marketing of copra is, by and large, certainly not part of the modern, mechanized, impersonal economy but also that it is not static, as the rapid adoption of motorized transport shows. Copra marketing, moreover, is transitional along the spectrum between a "native" and "foreign enclave" economy with the non-indigenous element playing a progressively more important role at the higher levels of marketing.

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<sup>99</sup>The "traditional economy" implies simple and static technology but not lack of economic behavior. Indeed, the rapid expansion of coconut production in response to a growth in world demand indicates rational economic behavior within the constraints of traditional technology. Traditional smallholder agriculture contrasts with scientific, plantation agriculture where technology is progressive, and the plantation is often an "economic enclave," largely unintegrated with the wider agricultural economy.

The industrial/export sector of the industry is in sharp contrast to the traditional sector. Capital intensive, industrialized, highly responsive to economic opportunity,<sup>100</sup> it is largely in foreign hands.<sup>101</sup> The Philippine coconut industry does not exhibit the usual dualism where the whole industry forms an enclave<sup>102</sup> but, rather, an "internal dualism" or pluralism. The contrasts among the industrial, marketing, and agricultural sectors lie at the root of much of the tension internal to the industry. The contrasts give rise to an inevitable appearance of exploitation of the poor, weak, and indigenous at one end of the spectrum and the endless complaints as to quality, efficiency, and generally unbusinesslike behavior from the other.

The preference of the industrial/exporting sector to do business with the large plantations reflects the desire to by-pass the industry's dualism by purchasing nuts and copra directly from the small but efficient plantation sector. For the foreseeable future, however, the bulk of production will continue to originate from the smallholdings, where the major problems originate not from "exploitation" but from the totally inadequate feeder road network. Apart from enormously adding to costs, poor

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<sup>100</sup>See, for example, Part II on the elasticity of coconut oil production as a function of profits.

<sup>101</sup>In 1965 Filipino producers/exporters were responsible for only 19% of copra exports, 8% of oil, 5% of meal and cake, and had no share at all in desiccated coconut exports (see Table 17).

<sup>102</sup>Typical, for example, of mineral industries in many Afro-Asian countries and the plantation economy of Malaya.

transport narrows the market and weakens the selling position of the farmers. In such circumstances it is hardly surprising that legislation against the symptoms has proved less than effective.

The incomes earned in the coconut industry are generated by the sale to foreign buyers of the industry's output. With the minor exception of desiccated coconut, the industry's output is purchased not because it is indispensable but because it is competitive. Coconut oil is a minor oil locked in a competitive battle, not so much with other producers of coconut oil but with other sources of oil. The price of coconut oil is essentially a function of the price of oils, in general.<sup>103</sup> In a situation of potentially long-run falling prices the coconut industry must reduce costs or suffer a decline in profitability.

The open, export nature of the industry is indicated by the high degree of responsiveness of prices at all levels to changes in world prices. Output, however, is not responsive to price changes in the short run because of the very low marginal cost of production.<sup>104</sup> This structure

<sup>103</sup>The argument that foreign cartels dictate the price of Philippine oil and copra is misleading. Unilever is indeed the world's largest buyer of oil and copra and together with the other major buyers in a strong market position. But Unilever and Procter & Gamble are the end users, and it is in their interests to use more coconut oil and less of other oils if the price of the former falls relative to the latter. The strongest evidence against the copra cartel theory is the behavior of the world fats and oils market (see Part III). The correlation of the prices of most fats and oils and the fluctuations in these prices are inconsistent with cartel power.

<sup>104</sup>From various cost-of-production studies it appears that the marginal cost of copra production is not more than 20% of total costs. The major variable costs are picking, husking, splitting, and drying and sacking. See, for example, AED, Handbook of Agriculture 1955, p. 5-8.

of costs enabled the industry to sustain production in periods of low world prices, but long-run expansion depended on a favorable ratio of prices and costs compared to alternative crops. At this point we have turned full circle; the export sector meshes with the domestic rice/corn economy and the decision on what to expand and a full understanding of past growth patterns depends on a wider multi-sectoral analysis.

Although the long-run expansion of coconut production was found to be partially dependent on domestic variables, the relative rates of growth of the individual coconut products were discovered to be a function of external variables and the Philippine exchange rate policy. The observed structural change within the industry or the changing contribution between the agricultural and industrial sectors was largely due to the changing relative importance of coconut oil production. The rate of growth of oil production was seen to be highly elastic with respect to profit opportunities as reflected in the effective oil/copra price ratio. This, in turn, was influenced by a complex of factors varying from a shortage of ships suitable for carrying copra in 1915-18 to the effect of devaluation on unrecorded copra trade and the impact of freight rate changes for oil during the years 1962-64.

The changing tariff policies of the importing countries did not play an important role in influencing the structure of the Philippine industry. Europe has been somewhat more protectionist than the United States, generally allowing copra in free of duties but levying ad valorem tariffs on oil. The United States levied a very substantial tax on

Philippine oil between 1934 and 1957, but this was associated with an equivalent corresponding tax on copra. Changes in the tariff policies from time to time did not lead to much discernible change in the pattern of trade, suggesting that the underlying structure of demand was the more important factor. The tariff structure described above, for example, would appear to explain the relatively greater importance of copra exports to Europe and oil to the United States. This is, at best, only part of the explanation, as the by-product of oil manufacture is relatively more valuable in Europe than the United States; thus Europe<sup>105</sup> is willing to pay a fractionally higher price for copra relative to oil than is the United States.

United States tariff policy was historically of considerable importance as a factor responsible for the growth of the Philippine coconut industry. The effect of the acts of 1921, 1922, 1934, was to reserve the huge and growing U. S. market for the Philippine product.<sup>106</sup> This policy was preserved in the post-war period when the United States continued to give preference to the Philippine product. Under the 1955 Revised Trade Agreement with the United States the preferences for the Philippine product were to be progressively reduced until their virtual abolition by 1974. As

<sup>105</sup>The main European buyers of both oil and copra are the Netherlands and Germany.

<sup>106</sup>Preference was of decisive importance only for desiccated coconut because of inelastic U. S. demand.

a mature, efficient industry there is no doubt that Philippine coconut products can compete successfully on equal terms with the coconut products of other countries. The problems arise not from the phasing out of preferences but from the necessity of paying a U. S. tariff on a product that meets competition from U. S. domestic products. The resulting elastic demand for the product places most of the burden of the tariff on the Philippine product.<sup>107</sup>

The U. S. tariff policy vis-a-vis non-Philippine coconut products is a result not of any rational attempt to pursue U. S. interests but an historical outcome of the attempts over the years to protect the Philippine product and U. S. agricultural interests. The only major reform was the suspension and abolition of the processing tax. This left a very substantial tariff on both oil and copra of non-Philippine origin. This tariff policy, is, therefore, the accumulation of past policies dating back to 1921, and it cannot possibly be argued that it represents U. S. interests. If, at the expiration of the Laurel-Langley Agreement, the Philippines pays all or part of these tariffs, then the tariff policy will diverge even more drastically from the domestic interests of the United States.<sup>108</sup> The U. S. tariff policy applied to non-Philippine products and scheduled to apply to Philippine products is economically irrational because of the severity of

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<sup>107</sup> Except for desiccated coconut where the tariff substantially increases the U. S. price.

<sup>108</sup> Under the U. S.-Philippines Trade Agreement, Philippine coconut products will begin paying the full U. S. tariff in 1974. This is four cents per pound for oil and 1.25 cents per pound for copra. Ceylon, as a member of GATT, pays three cents per pound on oil. Thus, after 1974 Ceylon, not the Philippines, will have preference in the U. S. market.

the taxes and the relative discrimination against oil.

Copra is bulky and deteriorates significantly as a result of shipping, and costs are, therefore, minimized by extraction in the country of production. As was shown in detail earlier in this paper, the historical basis for taxes on either oil or copra has disappeared as a result of changes in the use and growth of substitutes. The import of copra and coconut oil no longer represents any threat at all to U. S. farming, and it is in the interests of U. S. consumers to have access to cheap supplies of imported oil and copra.

In subsequent negotiations the Philippines should strive not for preferential treatment in the U. S. market but the freest possible access. A worldwide reduction in both preferential agreements and absolute tariff barriers is in the interests of both the Philippines and the consuming countries. The preferential agreements of the United Kingdom with her coconut product suppliers have raised prohibitive barriers to the entry of the Philippine product. The Philippines, as the largest and most competitive supplier, will gain by the breaking down of preferential agreements and the opening up and widening of the world international markets.

<sup>102</sup>The 1.25 cents copra tax is the equivalent of a three cents' oil tax. The four cents' tax which Philippine oil is scheduled to pay will make it more profitable for the oil exporters to export copra.

## **APPENDICES**

## APPENDIX I

### SOURCES AND RELIABILITY OF COCONUT STATISTICS

The published and unpublished sources of coconut statistics have been fully documented in the preceding pages. This note describes how some of the statistics have been gathered, how reliable they are, and it indicates the likely sources of some of the observed biases. The major emphasis is on production statistics although brief reference is also made to export and price statistics.

#### 1) Production Statistics

The Bureau of the Census and Statistics and the Bureau of Agricultural Economics (BAE) of the Department of Agriculture and Natural Resources (DANR) are the two principal sources of statistics on coconut production (area planted, total number of bearing trees, total nuts gathered, etc.). The data furnished by these sources are not consistent with each other as is shown by a comparison of the DANR's 1959 Crop and Livestock Survey (CLS) and the 1960 Census of Agriculture (see Table 54). The factors which account for these differences throw considerable light on the reliability of the data and the origin and extent of bias. A brief review of the relevant statistical agencies and the differences causing conflicting results follows.

Prior to 1953 the Statistics Section (under the Agricultural Extension Counterpart Project Number 438) of the Bureau of Agricultural Extension assumed the role of obtaining reliable data on cereals, particularly rice and corn, in order to overcome difficulties of conflicting statistics being supplied by the different agencies of the government. However, "promotional" work and "evaluation" of data were not compatible and, as a result, the Agricultural Economics Division was established. The AED took over control of all crop and livestock statistics. It was elevated to the status of a bureau in July, 1963, by Republic Act 3627, creating the Bureau of Agricultural Economics (BAE). The BAE conducts a sample survey at the end of each crop year (crop year starts July 1st and ends June 30th of the following year). While it has concentrated on rice and corn statistics, it also gathers data on livestock production and ten other selected crops including coconuts.

Created on August 19, 1940, by Commonwealth Act No. 591, the Bureau of the Census and Statistics has conducted a series of censuses including the 1948 and 1960 Census of Agriculture. Complete enumeration of all farm households was undertaken for the 1948 census. However, for the 1960 census a complete count of farms which are ten hectares and above was taken, and only every third small farm was included.

While the Census and the DANR's BAE both aim to gather reliable statistics on agricultural production, there is a difference in emphasis since the latter concentrates on rice and corn and gets supplementary information for other crops. The Crop and Livestock Survey, done by DANR's

TABLE 54

COCONUTS: AREA PLANTED, NUMBER OF TREES, NUMBER OF NUTS,  
TREES PER HECTARE, NUTS PER BEARING TREE, BY REGION  
D.A.N.R., 1959, AND CENSUS, 1960

Philippines Regions	Area Planted			Total Number of Trees		
	D.A.N.R. (000 Hectares)	Census	(2) as % of (3)	D.A.N.R. (In thousands)	Census	(5) as % of (6)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Philippines	1006.1	1497.0	67	166,580	195,584	85
Ilocos	3.3	2.6	125	550	393	139
Cagayan Valley	4.4	6.0	73	691	815	84
Central Luzon	19.0	9.5	201	2,654	1,225	216
Southern Tagalog	250.9	268.9	93	44,716	40,789	109
Bicol	192.9	279.5	69	32,338	34,325	94
Eastern Visayas	188.4	316.8	59	30,257	41,742	72
Western Visayas	95.2	119.3	80	19,751	15,437	102
Northern & Eastern Mindanao	124.6	212.4	58	19,752	25,843	76
Southern & Western Mindanao	127.3	282.5	45	19,872	35,074	56

TABLE 54

COCONUTS: AREA PLANTED, NUMBER OF TREES, NUMBER OF NUTS,  
TREES PER HECTARE, NUTS PER BEARING TREE, BY REGION  
D.A.N.R., 1959, AND CENSUS, 1960 (Continued)

Philippines Regions	Total Number of Bearing Trees			Total Nuts Gathered		
	D.A.N.R. (In Thousands)	Census	(8) as % of (9)	D.A.N.R. (In Millions)	Census	(11) as % of (12)
	(8)	(9)	(10)	(11)	(12)	(13)
Philippines	128,611	117,102	109	6041.3	4830.9	125
Ilocos	424	209	202	14.0	6.1	230
Cagayan Valley	534	408	130	17.8	15.4	116
Central Luzon	2,048	916	223	71.0	32.4	219
Southern Tagalog	34,502	28,806	119	2041.5	1114.2	183
Bicol	24,952	19,239	129	983.4	642.4	153
Eastern Visayas	23,424	24,939	93	972.6	993.6	97
Western Visayas	12,153	9,626	126	451.0	351.3	128
Northern & Eastern Mindanao	15,241	15,910	95	849.3	801.7	105
Southern & Western Mindanao	15,333	17,048	89	640.6	893.9	71

TABLE 54

COCONUTS: AREA PLANTED, NUMBER OF TREES, NUMBER OF NUTS,  
TREES PER HECTARE, NUTS PER BEARING TREE, BY REGION  
D.A.N.R., 1959, AND CENSUS, 1960 (Continued)

Philippines Regions	Trees Per Hectare		Nuts Per Bearing Tree	
	D.A.N.R. (5)/(2)	Census (6)/(3)	D.A.N.R. (11)/(8)	Census (12)/(9)
	(14)	(15)	(16)	(17)
Philippines	165	130	46	41
Ilocos	167	150	33	29
Cagayan Valley	157	135	33	37
Central Luzon	139	129	34	35
Southern Tagalog	178	151	59	38
Bicol	167	122	39	33
Eastern Visayas	160	131	41	39
Western Visayas	165	129	37	36
Northern & Eastern Mindanao	158	121	55	50
Southern & Western Mindanao	156	124	41	52

Sources: Columns 2, 5, 8, 11: BAE, DANR, Crop and Livestock Survey: 1958-1959.

Columns 5, 6, 9, 12: Census of the Philippines - 1960 - Summary of Agriculture.  
Figures for the regional level have been aggregated from their respective provinces.

BAE fills the gap during inter-censal years so that timely information can be made available.

The census coverage is much wider in scope than DANR's since it includes not only production statistics but also data on the structure and characteristics pertaining to the farm which, in effect, provides a satisfactory sampling frame for future sample surveys. It is intended to serve as a benchmark for estimates or forecasts of agricultural production-- both for crop and livestock.

Sampling Design: The CLS has a two-stage sampling design with the survey barrio as the primary sampling unit (PSU) and the farm household as the secondary sampling unit (SSU). The province is considered as an independent stratum. There are 1,172 sample barrios which comprise the PSU or a proportion of 1/22, while there are 6,143 sample farm households or a proportion of 1/15. For each barrio, there should always be at least two sample farm households. The sample farm households constitute a proportion of 1/350 for the entire country. A three-stage stratification scheme is employed using the palay density (proportion of palay area to farming area) as the main strata.

The Census, on the other hand, used a single-stage sampling design with some elements of stratification. Farms were divided into two groups: (1) those with an area of at least 1,000 square meters and not more than 10 hectares, and (2) those with an area greater than 10 hectares. One in every third farm was included in the first group while a complete count of all farms was taken for the second group. Checks revealed that some farms

were not fully classified in the right stratum. Some belonging to the first group were actually counted in the second group, and vice versa.

Sampling Frame: The list of farm households for the CLS is drawn from the list made by the enumerator during the actual survey. From the list, a random start is given by the field statistician, say number 5, and from this number, the enumerator counts from 1-15. He then interviews this 15th farm household, and every 15th farm from then on.

The frame for the 1960 Census of Agriculture was based on the Housing Census conducted two months earlier; i.e., February, 1960. Like the CLS, the systematic sampling was started with a random number to determine every third farm for the second group.

Time Element: DANR - Crop year - July 1, 1958-June 30, 1959.

Census - Crop year - July 1, 1959-June 30, 1960.

(Actual Agricultural Census - May, 1960)

Both agencies use the crop year as the reference period; i.e., July 1 to June 30 of the succeeding year. The DANR figures are gathered towards the end of the crop year and are released when the crop year is over. However, the preliminary results from the census were available only after three and a half years because of the volume of processing work involved.

The time lag produces a little discrepancy between the two figures as will be shown. DANR figures for the period covered by the census should ideally be used, but these have never been published.

Personnel: To produce reliable results the BAE, DANR, has a trained and permanent personnel in the different provincial, municipal, and barrio levels who are under the direct supervision of 9 regional directors. The organizational structure comprises 9 Regional Statisticians, 56 Provincial Statisticians, Field Statisticians, and Enumerators.

Each level is responsible for the training of the next lower level, both on the theoretical side and in the art of interviewing and general implementation.

For the 1960 Census of Agriculture, the organizational structure comprised 10 Regional Directors, 102 District Supervisors, 1,350 Municipal Supervisors, 9,543 Enumerators, and 122 Clerical Helpers.

For each organization, it is required that the enumerators be at least high school graduates and a resident of the place where he is surveying. However, these qualifications were not strictly followed in the 1960 census due to the employment of political proteges. This may be one of the reasons why some questionnaire forms were incomplete and the census editors resorted to the conversion tables (furnished by the DANR) for estimates. Likewise for the BAE, it is also dubious whether the enumerators hired are adequately qualified. Although hiring the same interviewers year after year gives them an edge in training and experience over census interviewers, there may be a tendency for these BAE men to report similar figures year after year, due to understaffing and other reasons.

Major Differences Between DANR and Census Figures (see Table 54): Using the census figures as the base, it can be seen that for the Philippines as a whole the DANR figures understate the area planted and the total number of trees and overstate the total nuts gathered, trees per hectare, and nuts per bearing tree. The discrepancies show an interesting consistency; the DANR data on area and number of trees are understated most seriously in the regions where the rate of growth of production is highest. The understatement is very large in Mindanao and the eastern Visayas and greatest of all in southern and western Mindanao which has experienced the fastest rate of growth. The reason is that DANR data have largely failed to record the changing distribution of coconut lands because of a widespread tendency to report very similar figures year after year.

Area Planted: In determining the area planted, both the DANR (CLS) and the Census enumerators ask the farmer the size of the area planted to coconuts. This fact is often known by the farmer. In case the farmer does not know, the BAE man asks for the approximate number of trees and measures the distance in between the trees to compute the area planted. If the number of trees per hectare is still not known, he may consult the local agriculturist (who is also a DANR man) or the files of the municipal government office are checked.

The census man, on the other hand, resorts to his conversion table (coconuts = 100 - 204 trees/ha.) in his manual to compute the area, if the number of trees is known and the area unknown. He could also consult with

the Municipal Supervisor for the average number of trees per hectare in the locality to determine the area. According to Miss Dillague of the Bureau of Census, it was seldom necessary to consult the conversion tables or the supervisor since most farmers have a good knowledge of the size of their farm.

Further reasons why DANR area estimates differ from those of the census:

a. According to the definition of a sample farm household for the CLS, owner-operated farms which lie outside the sample barrio are not included; whereas, the farms owned, but lying outside the boundary limit, are included in the census. The CLS considers the sample barrio as the primary sampling unit while the census defines the primary sampling unit with reference to the address of the operators of farm households (for instance, a farm which is owned by a farmer in Rizal but which is actually a part of Bulacan is included in the province of Rizal).

b. Areas where coconut trees are very few in number, say 15 to 20, are not included in the DANR data and, hence, no report is made for such areas. On the other hand, the census includes all trees planted irrespective of whether there are few or many in one area. The area for these coconuts (especially the scattered ones) is computed with the aid of the conversion ratio.

c. Due to the time lag of one year, the CLS fails to record the new plantings made in 1960, especially in the Mindanao area, while the Census has been able to include them.

d. The sampling error of the DANR data is sufficient to account for substantial, erratic inconsistencies at the regional level or even at the provincial level where production is small. The census sample error is very low, including as it does, a full enumeration of large plantations and 1/3 of small farms. The DANR sample is 1/350 for the entire country and biased towards rice and corn farms.

e. The CLS is palay-oriented. This is particularly serious in parts of Mindanao and Visayas where coconuts predominate and there is little palay grown since the rice area sample will not be appropriate to the latter areas.

f. The fixed sample farms also account for the understatement of the area planted in DANR's case. Additional farm households are not included in the list from which the farm households are chosen. The "release of farmers" is done only after 2 or 3 years, according to Mr. Leonardo Paulino of DANR, because of lack of funds to finance the survey. This partly explains DANR's tendency to report the same statistics year after year as evidenced by the following:

<u>Year</u>	<u>Area Planted (in thousand hectares)</u>
1954	990.0
1955	990.0
1956	992.0
1957	992.0

Total Number of Trees--Bearing and Non-Bearing: There is a general understatement of about 15% for the DANR figures with respect to the total number of trees. Some of the possible reasons for the discrepancy include the following:

a. When the farmer is not in a position to tell the enumerator the total number of trees planted, the latter multiplies the average number of trees per hectare in the locality by the area planted. This information (average number of trees/ha.) is supplied either by the farmer himself or the agriculturist for the CLS and the municipal supervisor for the census or the conversion ratio as provided for in the manual. A different ratio supplied by the agriculturist and the supervisor will lead to a completely different figure for the total number of trees.

b. In its survey, the DANR does not include the coconut trees planted along the coast or those few grown on the home lot or along edges of roads. This, therefore, results in a relatively smaller figure than the census, since the latter includes all trees grown irrespective of the number of the geographical location.

Total Nuts Gathered: Statistics on total nuts gathered by the DANR give about one-fourth more than that of the census. There is a large overstatement throughout. The following reasons explain the difference:

a. The CLS determines the total nuts by multiplying the average number of nuts per tree by the number of bearing trees, in case the farmer does not know the total number of nuts gathered. On the other hand, the

census men estimate this by obtaining the maximum and minimum number of nuts for a harvest and computing for the average number of nuts. This average is then multiplied by the number of harvests to be actually conducted during that census year. The difference in this system might partly account for the 25% deviation.

b. Most farmers do not keep records of their production and usually depend on their memory. Since this problem holds for both the CLS and the census, the number a farmer gives one fieldman may then be different from what he has given to another.

c. Copra marketing which is often done on a contract basis may leave the farmer ignorant of the share of his crop he obtains. The contract, usually on a wholesale basis, calls for the buyer to do the harvesting and processing of copra by himself. Hence, the farmer may guess a number just to please the interviewer. Furthermore, some tenants who work for landlords are not allowed to give information without the previous consent of the landlord. The figure supplied by the farmer may then vary for the CLS and the census.

d. Production for 1959 (CLS) might have been better than in 1960 (Census) because of favorable weather conditions. In a one-year period, destructive typhoons can cause damage to the coconut-bearing trees and, hence, reduce the yield.

Some General Comments on the Reliability of Production Data: Virtually all the official published and some unpublished production data from 1929-1965 are shown in Tables 56 and 57. It would be possible to write at considerable length on the large errors that must be involved in much of the data. Many of these discrepancies are obvious to the reader who can compare the annual statistics with the census data. A scrutiny of the trends over time also exposes many sources of serious weakness. The reader who wishes to make use of the data in these two tables is advised to exercise considerable caution. Even some data which appear reasonable (such as the 1939 census result) are shown on comparison with the export statistics to understate seriously the number of nuts produced. Because of these difficulties most of the analysis of this paper has not been based on the production statistics but has been calculated from the export data.

An interesting example of how it is possible to derive production data from export statistics is shown in Table 55. The problem is how to derive acceptable production and domestic consumption figures from coconut oil. As can be seen from Table 57, Columns 25 and 26, official published production data are available for only a limited number of years. PHILCOA has an unpublished estimate of domestic consumption but with no explanation as to how the data were derived. To check this data and to derive a long series, it proved possible to work back from the exports of the by-product, meal and cake. This involved the use of the conversion coefficients and the assumption, which is not quite true, that all the meal and cake is exported.

## 2) Export Statistics

The reliability of export statistics has been discussed at various places in the text. In addition, an earlier paper by the present writer discusses various aspects of the problem and compares Philippine exports of coconut products with the trading partners imports.\* Table 22 and Table 23 of that paper compare Philippine exports of coconut oil to the United States with U. S. imports, and Tables 24 and 25 do the same thing with desiccated coconut trade.

The main causes of errors in the copra export statistics between 1955 and 1965 were the understatement of exports, 1955-1962, and their substantial overstatement in 1963. Exports of copra of Philippine origin are also overstated to the extent that copra is smuggled in from Indonesia and re-exported as Philippine copra.

## 3) Price Statistics

All the available annual data on prices of coconut products are shown in Table 60. Price data are generally superior to production and export data although the lack of detailed cross-section data on copra prices and postwar coconut prices are serious omissions.

\*George L. Hicks, "Philippine Foreign Trade, 1950-1965" (Washington: National Planning Association, Center for Development Planning, Field Work Report #10, September, 1966) mimeographed.

TABLE 55

COCONUT OIL: PRODUCTION, EXPORTS, AND DOMESTIC CONSUMPTION  
(In thousand metric tons)

Year	Production	Exports	Domestic Consumption	
			(2) - (3)	PHILCOA Estimate
1	2	3	4	5
1946	11.0	1.5	9.5	43.2
1947	51.2	17.3	33.9	61.0
1948	101.5	46.6	54.9	57.4
1949	123.4	61.3	62.1	67.9
1950	118.9	69.8	49.1	71.8
1951	124.6	77.8	46.8	74.9
1952	148.9	80.5	68.4	76.6
1953	120.8	59.4	61.4	80.1
1954	142.5	65.2	77.3	89.9
1955	153.8	74.2	79.6	94.4
1956	188.4	108.9	79.5	104.3
1957	187.5	97.6	89.9	114.5
1958	178.2	86.9	91.3	121.7
1959	152.7	64.6	88.1	117.6
1960	154.0	59.7	94.3	93.9
1961	167.4	74.4	93.0	83.9
1962	272.3	147.6	124.7	112.5
1963	317.7	195.3	122.4	136.2
1964	363.8	229.4	134.4	130.9
1965	343.2	235.8	107.4	

Source: Column 2 - Derived from export of copra meal and cake us  
the following conversion coefficients:

1 ton copra = .325 ton cake  
1 ton copra = .63 ton of oil

Column 3 - Table 28.

Column 5 - PHILCOA, unpublished.

**APPENDIX II**

**STATISTICAL API  
(Tables 56-1**

TABLE 56

## COCONUTS: AREA PLANTED, NUMBER OF TREES, NUTS PRODUCED, AND YIELD

Year	AREA PLANTED (In Thousand Hectares)		TOTAL (Million Trees)		NUMBER OF TREES			BEARING TREES (Million Trees)		
	Annual Statistics	Census	Annual Statistics	Census	NOT OF BEARING AGE (Million Trees)	TAPPED FOR TUBA (Million Trees)	Census	Annual Statistics	Census	
	1	2	3	4	5	6	7	8	9	10
1929	531		101.527		36.444				65.083	
1930	551		105.269		36.535				68.734	
1931	561		107.089		37.455				69.634	
1932	566		107.926		36.384				71.542	
1933	601		114.054		40.678				73.376	
1934	608		115.339		40.967				74.372	
1935	618		116.987		31.202				85.785	
1936	632		119.556		31.200				88.356	
1937	638		120.696		30.336				90.360	
1938	643		121.685		30.506				91.179	
1939		1,051		139.209		54.345	.800			84.064
1940	1,051									
-										
1946	960		128.093		29.257				98.836	
1947	960		142.405		32.525				109.880	
1948	960	860	137.133	113.436	31.321	25.404	.502		105.812	87.530
1949	966		137.454		31.394				106.060	
1950	985		138.123		31.543				106.575	
1951	987		180.211		41.160				139.051	
1952	988		150.689		34.418				116.271	
1953	990		149.296		34.099				115.197	
1954	990		164.300		37.526				126.774	
1955	990		164.350		37.537				126.813	
1956	992		164.400		37.549				126.851	
1957	992		164.400		37.549				126.851	
1958	996		165.000		37.620				127.380	

TABLE 56

## COCONUTS: AREA PLANTED, NUMBER OF TREES, NUTS PRODUCED, AND YIELD (Continued)

Year	AREA PLANTED (In Thousand Hectares)		TOTAL (Million Trees)		NUMBER OF TREES NOT OF BEARING AGE TAPPED FOR TUBA (Million Trees)			BEARING TREES (Million Trees)	
	Annual Statistics	Census	Annual Statistics	Census	Annual Statistics	Census	Census	Annual Statistics	Census
	2	3	4	5	6	7	8	9	10
1959	1,006		166.580		37.980			128.600	
1960	1,059	1,497	167.109	195.584	33.350	76.669	1.813	133.759	117.102
1961	1,200		185.082		36.051			149.031	
1962	1,284		197.635		30.497			167.138	
1963	1,392		211.668		28.311			183.357	
1964	1,483		232.136		40.744			191.392	
1965	1,605		240.864		55.564			185.300	

TABLE 56

COCONUTS: AREA PLANTED, NUMBER OF TREES, NUTS PRODUCED, AND YIELD (Continued)

Year	P R O D U C T I O N   O F   N U T S						YIELD PER BEARING TREE (Nuts per Tree)	
	TOTAL NUTS (Million Nuts)		NUTS FOR COMMERCIAL PURPOSES (Million Nuts) <sup>a</sup>		HOME MADE OILS & FOOD NUTS (Million Nuts) <sup>b</sup>		(11)/(9)	(12)/(10)
	Annual Statistics	Census	Annual Statistics	Census	Annual Statistics	Census	Annual Statistics	Census
	11	12	13	14	15	16	17	18
1929	2,156						33	
1930	2,057						29	
1931	1,869						26	
1932	1,944						27	
1933	2,142						29	
1934	2,114						28	
1935	2,874						33	
1936	3,147						35	
1937	2,983						33	
1938	3,450						37	
1939		2,303		2,173		130		27
1940								
1946	917							
1947	4,565						41	
1948	4,138	3,194		3,067		127	39	36
1949	3,591						33	
1950	3,997						37	
1951	5,280						37	
1952	3,406						29	
1953	4,182				102 <sup>c</sup>		36	
1954	4,603		4,473		130		36	
1955	5,321		5,183		138		41	

TABLE 56

## COCONUTS: AREA PLANTED, NUMBER OF TREES, NUTS PRODUCED, AND YIELD (Continued)

Year	TOTAL NUTS (Million Nuts)		P R O D U C T I O N   O F   N U T S				YIELD PER BEARING TREE (Nuts per Tree)	
			NUTS FOR COMMERCIAL PURPOSES (Million Nuts) <sup>a</sup>		HOME MADE OILS & FOOD NUTS (Million Nuts) <sup>b</sup>		(11)/(9)	(12)/(10)
	Annual Statistics	Census	Annual Statistics	Census	Annual Statistics	Census	Annual Statistics	Census
	11	12	13	14	15	16	17	18
1956	5,504				99 <sup>c</sup>		43	
1957	5,951				106 <sup>c</sup>		46	
1958	5,974		5,821		153		46	
1959	6,041		5,661		381		46	
1960	6,016	4,831	5,587	4,586	429	245	44	41
1961	6,195		5,681		513		41	
1962	7,396		6,849		547		44	
1963	7,704		7,068		637		42	
1964	7,222		6,768		454		37	
1965	7,052		6,878		173		38	

Sources: Columns 2, 4, 6, 9, and 11: 1929-1940 - Yearbook of Philippine Statistics, 1946.  
1946-1953 - The Raw Material Resources Survey  
1954-1959 - Crop and Livestock Survey, BAE, DANR (1954-55, 1956-57, 1958-59).  
1960-1965 - Unpublished Reports, BAE, DANR, 1960-65.  
Columns 3, 5, 7, 8, 10, 12, 14, and 16: Censuses of 1939, 1948, and 1960 - Summary Volumes of Agriculture.  
Columns 13 and 15: 1929-1940, 1946-1953 - No data available.  
1954-1959 - CLS, op. cit.  
1960-1965 - Unpublished reports, op. cit.

TABLE 57

## COCONUT PRODUCTS: PRODUCTION AND VALUE

Year	T U B A				H O M E-M A D E O I L		
	Quantity		Value		Quantity	Value	Nuts Used
	(Thousand Liters)		(Thousand Pesos)		(000 Liters)	(000 Pesos)	(Thousand Nuts)
	Annual Statistics	Census	Annual Statistics	Census	Annual	Statistics	Annual Statistics
1	2	3	4	5	6	7	8
1929	115.8		12,700		1,640	610	
1930	116.8		11,809		1,874	661	
1931	98.4		7,841		1,972	508	
1932	93.4		4,968		1,614	342	
1933	89.4		3,984		2,311	381	
1934	124.4		5,687		2,378	269	
1935	110.3		5,419		2,391	316	
1936	70.0		3,987		3,260	704	
1937	67.0		3,842		4,706	1,211	
1938	66.7		4,692		3,176	832	
1939		113.4		5,010			
1940							
-							
1946							
1947							
1948		96.3		13,892	3,649	3,658	
1949					3,208	2,732	
1950					3,326	2,680	
1951					3,056	2,536	
1952					5,002	5,475	
1953					3,255	2,399	
1954					3,200	2,133	35,200
1955					3,850	2,690	42,350
1956					3,980	2,719	
1957					4,100	2,758	
1958					4,260	2,921	42,600
1959					4,229	2,921	42,288
1960		362.3		49,528	3,734	2,513	32,270
1961					2,960	2,101	29,597
1962					3,754	2,663	37,535
1963					3,593	2,413	35,932
1964					4,438	2,973	37,722
1965					7,756	5,782	65,925

TABLE 57

## COCONUT PRODUCTS: PRODUCTION AND VALUE (Continued)

Year	FOOD NUTS		C O P R A					
	Quantity (Million Nuts)	Value (Thousand Pesos)	Nuts Used (Million Nuts)		Quantity (Thousand M.T.)		Value (Million Pesos)	
	Annual	Statistics	Annual	Census	Annual	Census	Annual	Census
	9	10	11	12	13	14	15	16
1929	235	8,266	1,920		480		67.5	
1930	212	6,263	1,840		460		57.5	
1931	168	3,650	1,680		420		33.6	
1932	165	2,126	1,624		406		26.0	
1933	138	1,540	1,888		472		23.1	
1934		1,664	1,900		475		19.5	
1935		1,815	2,160		540		37.9	
1936		5,996	2,604		651		51.2	
1937		15,838	2,088		522		62.4	
1938		10,261	2,792		698		76.3	
1939				2,008		504		19.6
1940								
-								
1946								
1947								
1948	103		3,532	2,995	883	720.6	326.3	262.5
1949	110		2,792		698		218.9	
1950	84		3,120		780		211.1	
1951	95		4,288		1,072		419.6	
1952	167		2,992		748		146.1	
1953	102	5,508	3,424		856		214.1	
1954	95	5,195	4,239		942		180.4	
1955	96	5,571	4,963		1,103		211.0	
1956	99	5,327	4,560		1,140		224.3	
1957	106	5,846	5,276		1,319		261.6	
1958	110	5,997	5,541		1,293		346.1	
1959	338	18,601	5,358		1,072		227.7	
1960	397	34,806	5,377		1,075		366.5	
1961	484	31,336	5,355		1,071		293.9	
1962	502	35,716	6,503		1,356		415.0	
1963	601	42,086	6,699		1,488		549.7	
1964	416	29,114	6,508		1,487		594.8	
1965	107	8,180	6,619		1,470		637.9	

TABLE 57

## COCONUT PRODUCTS: PRODUCTION AND VALUE (Continued)

Year	DESICCATED COCONUT					
	Nuts Used (Million Nuts)		Quantity (Metric Tons)		Value (Thousand Pesos)	
	Annual Statistics	Census	Annual Statistics	Census	Annual Stat.	Census
	17	18	19	20	21	22
1929						
1930						
1931						
1932						
1933						
1934						
1935						
1936	154		30,723			
1937	174		34,731			
1938	146		29,145			
1939	126	165	25,227			1,437
1940	186		37,278			
-						
1946						
1947						
1948						
1949						
1950						
1951						
1952						
1953			45,300		24,915	
1954	234		42,500		23,375	
1955	220		40,000		22,000	
1956	210		42,000		23,100	
1957	270		54,000		29,700	
1958	280		56,000		30,800	
1959	303		50,400		27,720	
1960	210		42,000		23,100	
1961	326		59,287	56,397	32,608	37,922
1962	345		62,774		32,942	
1963	368		67,015		37,288	
1964	260		62,958		34,504	
1965	259		62,658		34,309	

TABLE 57

## COCONUT PRODUCTS: PRODUCTION AND VALUE (Continued)

C O C O N U T O I L				
Year	Copra Used (000 Metric Tons) Annual Statistics	Nut Equivalent (Million Nuts) Annual Statistics	Quantity (000 Metric Tons) Annual Statistics	Census
	23	24	25	26
1929				
1930				
1931				
1932				
1933				
1934				
1935				
1936	284	1,136	170	
1937	322	1,289	193	
1938	370	1,480	222	
1939	341	1,364	204	
1940	405	1,620	243	
1941				
-				
1946				
1947				
1948				
1949				
1950				
1951				
1952				
1953				
1954				
1955				
1956	332	1,329	199	
1957	274	1,096	164	
1958	278	1,112	167	
1959	217	868	130	
1960	218	872	131	
1961				149
1962				
1963				
1964				
1965				

TABLE 57

## COCONUT PRODUCTS: PRODUCTION AND VALUE (Continued)

Year	COCONUT OIL (Continued)		COPRA MEAL AND CAKE			
	Value (Thousand Pesos)		Quantity (000 Metric Tons)		Value (Thousand Pesos)	
	Annual Statistics	Census	Annual Statistics	Census	Annual Stat.	Census
	27	28	29	30	31	32
1929						
1930						
1931						
1932						
1933						
1934						
1935						
1936						
1937						
1938						
1939						
1940						
-						
1946						
1947						
1948						
1949						
1950						
1951						
1952						
1953						
1954						
1955						
1956	67,823					
1957	74,622					
1958	93,964		1,289		10,082	
1959	96,278		1,038		12,544	
1960	82,764					
1961		91,347		98.6		
1962						12,705
1963						
1964						
1965						

SOURCES TO TABLE 57

- Column 2 - 1929-1938 - Yearbook of Philippine Statistics: 1946, Bureau of Census of Statistics, Manila.  
1939-1940, 1946-1965 - No data available.
- Column 3 - 1939, 1948, 1960 - Census of Agriculture.
- Column 4 - 1929-1938 - Yearbook of Philippine Statistics: 1946.  
1939-1940, 1946-1965 - No data available.
- Column 5 - 1939, 1948, 1960 - Census of Agriculture.
- Columns 6&7-1929-1938 Yearbook of Philippine Statistics: 1946.  
1948-1955 - Philippine Agricultural Statistics, Vol. II, BAE, DANR, 1954.  
1953 - The Raw Materials Resources Survey, Vol. II  
1954-1959 - Crop and Livestock Statistics, BAE, DANR.  
1960-1965 - Unpublished Reports, BAE, DANR.
- Column 8 - 1929-1940 - No data available.  
1948-1953  
1954-1959 - Crop and Livestock Statistics, BAE, DANR.  
1960-1965 - Unpublished Reports, BAE, DANR.
- Column 9 - 1929-1933  
1934-1940 - No data available.  
1948-1952 - Philippine Agricultural Statistics, Vol. II  
1953 - The Raw Materials Resources Survey  
1954-1959 - Crop and Livestock Statistics, BAE.  
1960-1965 - Unpublished Reports of the BAE, DANR.
- Column 10 - 1929-1938 - Yearbook of Philippine Statistics: 1946.  
1948-1952 - No data available.  
1953 - The Raw Materials Resources Survey.  
1954-1959 - Crop and Livestock Statistics, BAE.  
1960-1965 - Unpublished Reports, BAE, DANR.
- Column 11 - 1929-1938 - Column 13 multiplied by 4 using the conversion ratio 4 nuts to 1 kg. of copra.  
1946-1953) - No data available; same rule is applied; i.e., Col. 13 x 4.  
1956-1957) - Crop and Livestock Statistics, BAE, DANR.  
1954-1955) - Crop and Livestock Statistics, BAE, DANR.  
1958-1959)  
1960-1965 - Unpublished Reports, BAE, DANR.

SOURCES TO TABLE 57 (Continued)

- Column 12 - 1939, 1948 - Census of Agriculture.
- Column 13 - 1948-1952 - Philippine Agricultural Statistics, Vol. II.  
All other years - Same sources as Col. 10.
- Column 14 - 1939, 1948 - Census of Agriculture.
- Column 15 - 1929-1938 - Yearbook of Philippine Statistics: 1946.  
All other years - See Column 9 with asterisks.
- Column 16 - 1939, 1948 - Census of Agriculture.
- Column 17 - 1948-1953)  
1929-1935) - No data available.  
1936-1940 - Column 19 converted into copra, then into  
nut equivalent; i.e., Col. 19 x 1.25, then times 4.  
In brief, Col. 19 x 5 = Col. 17. 1 metric ton of  
dis. coconut = 1.25 metric tons of copra. 4 nuts =  
1 kilogram of copra, resecada.  
1954-1959 - Crop and Livestock Statistics, BAE, DANR.  
1960-1965 - Unpublished reports, BAE.
- Column 18 - 1939 - Census of Agriculture.
- Column 19 - 1929-1935 - No data available.  
1936-1940 - Yearbook of Philippine Statistics: 1940.  
Figures are written in terms of pounds--converted into  
metric tons for Col. 19.  
1 metric ton = 2,204.6 lbs.  
1948-1952 - No data available.  
1953 - The Raw Materials Resources Survey.  
1954-1959 - Crop and Livestock Statistics.  
1960-1965 - Unpublished Reports, BAE, DANR.
- Column 20 - 1961 - Economic Census of the Philippines 1961.  
Bureau of Census and Statistics.
- Column 21 - 1929-1940, 1948-1952 - No data available.  
1953 - The Raw Materials Resources Survey  
1954-1959 - Crop and Livestock Statistics, BAE, DANR.  
1960-1965 - Unpublished Reports, BAE, DANR.
- Column 22 - 1939 - Census of Agriculture.  
1961 - Economic Census of the Philippines.

**SOURCES TO TABLE 57 (Continued)**

**Column 23** - Column 27 converted into copra equivalent; i.e., Col. 27 divided by 0.6 since 1 ton of copra = 0.6 ton of oil. 1936-1940, 1956-1960 - conversion rule applied. All other dates - not applicable because of lack of data for Col. 27.

**Column 24** - 1936-1940, 1956-1960 - Column 23 times 4, since 1 kg. of copra = 4 nuts.

**Column 25** - 1929-1934, 1946-1955, 1961-1965 - No data available.  
1936-1940 - Yearbook of Philippine Statistics: 1940.  
1956-1960 - Annual Survey of Manufacturing: 1956-1960.

**Column 26** - 1961 - Economic Census of the Philippines.

**Column 27** - 1929-1940, 1946-1955, 1961-1965 - No data available.  
1956-1960 - Annual Survey of Manufacturing: 1956-1960.

**Columns 28, 32, 34** - 1961 - Economic Census of the Philippines.

**Columns 29 & 31** - 1929-1940, 1946-1957, 1961-1965 - No data available.  
1958-1960 - Annual Survey of Manufacturing.

TABLE 58

EXPORTS IN COPRA EQUIVALENT  
(1000 Metric Tons)

Year	Desiccated Coconut	Coconut Oil	Copra	Total	Copra Meal
1	2	3	4	5	6
1901			32.5	32.5	
1902			59.2	59.2	
1903			82.2	82.2	
1904			38.6	38.6	
1905			55.8	55.8	
1906		1.0	60.6	61.6	
1907		1.3	58.6	59.9	
1908		4.5	97.5	102.0	
1909			109.0	109.0	
1910			120.5	120.5	
1911			142.2	142.2	
1912			142.8	142.8	
1913		8.0	82.2	90.2	2.7
1914		19.0	87.3	106.3	4.0
1915		21.4	139.1	160.5	
1916		25.5	72.3	97.8	1.6
1917		71.7	92.2	163.9	1.1
1918		183.0	55.1	238.1	
1919		222.1	25.1	247.2	37.6
1920		123.1	25.8	148.9	37.0
1921		143.3	150.3	293.7	44.4
1922	1.1	170.2	173.1	344.4	67.2
1923	5.1	141.6	207.1	353.8	50.8
1924	9.6	177.2	156.8	343.5	65.8
1925	14.7	165.3	146.7	326.7	55.8
1926	16.9	186.2	174.0	377.1	71.3
1927	17.9	229.8	199.3	477.0	90.8
1928	24.0	225.8	234.4	484.2	81.6
1929	26.2	302.4	173.6	502.2	113.8
1930	23.5	233.9	174.3	431.7	89.9
1931	19.8	261.8	174.2	455.9	98.6
1932	18.9	182.0	137.2	338.2	75.8
1933	21.1	253.4	308.8	583.2	99.9
1934	27.7	229.9	342.7	600.3	99.7
1935	40.0	262.2	252.9	555.1	101.9

TABLE 58

EXPORTS IN COPRA EQUIVALENT (Continued)  
(1000 Metric Tons)

Year	Desiccated Coconut	Coconut Oil	Copra	Total	Copra Meal
1	2	3	4	5	6
1936	39.7	253.4	291.1	584.1	108.3
1937	47.9	259.2	236.5	543.7	110.5
1938	40.3	260.4	331.0	631.7	129.3
1939	20.0	266.2	400.7	686.8	114.4
1940	48.9	295.1	341.9	685.9	105.0
1941		304.8	265.2	569.9	55.4
1946	7.4	4.0	390.0	401.4	5.9
1947	33.7	48.0	1008.4	1090.1	27.1
1948	97.7	125.1	586.6	809.4	53.7
1949	67.8	97.3	528.8	693.9	65.3
1950	85.9	110.8	707.2	903.9	63.0
1951	55.8	123.6	775.0	954.4	65.9
1952	46.0	127.9	670.8	844.7	78.8
1953	58.2	94.4	607.0	759.6	63.9
1954	53.7	103.5	763.2	920.5	75.4
1955	57.1	117.7	804.8	979.7	81.4
1956	57.3	172.9	966.3	1196.5	99.7
1957	64.6	155.0	943.0	1162.6	99.2
1958	60.7	138.0	811.9	1010.6	94.3
1959	58.2	102.6	681.1	841.9	80.8
1960	69.1	94.8	804.4	968.3	81.2
1961	69.6	118.1	627.5	815.2	88.7
1962	73.6	234.3	779.4	1087.4	144.1
1963	82.7	310.0	1032.7	1425.4	168.1
1964	81.8	364.2	910.0	1356.0	192.5
1965	79.7	374.2	883.5	1337.4	181.6

Source: Albert J. Nyberg, "Growth in the Philippine Copra Industry" (mimeographed). For primary sources, see Tables 27 and 33. Most of the material in this table is available in Tables 27 and 33, but the usefulness of this presentation is the expression of all exports in terms of copra equivalent. Copra meal is expressed in terms of thousand tons of meal, as the copra involved has been included under coconut oil.

The conversion ratios used are as follows:

1 ton of copra = 0.63 tons of oil  
= 0.85 tons of desiccated coconut.

TABLE 59

## RELATIVE PRICES OF COPRA AND OTHER AGRICULTURAL PRODUCTS, 1912-1914 - 1966

Year	Copra		Abaca		R.P. <sup>a</sup> (5) (3)	Sugar		R.P. (8) (3)	Palay		R.P. (11) (3)	Corn		R.P. (14) (3)
	₱/100 Kg.	Index	₱/Picul	Index		₱/Picul	Index		₱/Chan	Index		₱/Chan	Index	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1912-14	17.50	100	13.15	100	100	5.29	100	100	2.63	100	100	3.08	100	100
1915	10.67	62.7	12.48	94.9	151.3	5.41	102.3	163.1	2.76	104.9	167.3	2.33	75.6	120.6
1916	13.38	78.4	17.71	134.7	171.8	5.65	106.8	136.2	2.68	101.9	130.0	2.23	72.4	92.3
1917	14.18	83.2	24.99	190.0	228.4	6.20	117.2	140.9	2.85	108.4	130.3	2.79	90.6	108.9
1918	14.12	77.1	35.06	266.6	345.8	5.79	109.5	142.0	3.77	143.3	185.9	3.97	128.9	167.2
1919	17.19	101.0	27.72	210.8	208.7	11.41	215.7	213.6	5.58	212.2	210.1	6.53	212.0	209.9
1920	29.55	173.9	24.16	183.7	105.6	22.45	424.4	244.0	7.01	266.5	153.2	6.91	224.3	129.0
1921	15.82	93.0	15.66	119.1	128.1	8.90	168.2	180.9	3.78	143.7	154.5	5.55	180.2	193.8
1922	11.98	70.4	10.41	79.2	112.5	5.49	106.8	151.7	3.22	122.4	173.9	4.54	147.4	209.4
1923	14.07	82.6	13.16	100.1	121.2	9.74	184.1	222.9	3.40	129.3	156.5	4.10	133.1	161.1
1924	14.79	86.9	13.82	105.1	120.9	10.69	202.1	232.6	4.20	159.7	183.8	4.20	136.4	157.0
1925	16.50	96.9	27.53	171.3	176.8	7.35	138.9	143.3	4.20	159.7	164.8	4.00	129.9	134.0
1926	17.76	104.4	22.84	173.7	166.4	5.77	109.1	104.5	4.27	162.3	155.4	4.70	152.6	146.2
1927	15.68	92.1	21.69	164.9	179.0	6.76	127.8	138.8	4.02	152.8	165.9	4.14	134.4	146.0
1928	15.74	92.6	19.23	146.2	157.9	6.68	126.3	136.4	3.67	139.5	150.6	3.55	115.2	124.4
1929	16.66	100	16.24	100	100	9.21	100	100	3.88	100	100	3.98	100	100
1930	13.62	81.7	12.21	75.2	92.0	8.23	89.4	109.3	3.60	92.8	113.5	3.90	98.0	119.9
1931	7.51	45.1	6.61	40.7	90.3	7.79	84.6	187.7	2.60	67.1	148.7	2.64	66.3	147.2
1932	6.44	38.6	3.98	24.5	63.4	7.03	76.3	197.5	1.89	48.7	126.0	1.52	38.2	98.8
1933	5.02	30.1	3.70	22.8	75.6	5.86	63.6	211.2	1.81	46.6	154.8	1.74	43.7	145.1
1934	4.28	25.7	3.81	23.5	91.3	6.75	73.3	285.3	1.98	51.0	198.6	1.91	48.0	186.8
1935	8.88	53.3	3.81	23.5	44.0	6.79	73.7	138.3	2.02	52.0	97.7	2.25	56.5	106.1
1936	10.93	65.6	8.25	50.8	77.4	7.28	79.0	120.5	2.81	72.4	110.4	2.47	62.1	94.6
1937	13.03	78.2	7.62	46.9	60.0	6.39	69.4	88.7	2.44	62.9	80.4	2.34	58.8	75.2
1938	6.01	36.1	8.89	54.7	151.8	6.92	75.1	208.3	2.61	67.3	186.5	2.21	55.5	153.9
1939	5.86	35.2	5.08	31.3	88.9	6.42	69.7	198.2	2.92	75.3	214.0	2.32	58.3	165.7
1940	3.87	23.2	5.08	31.3	134.7				2.82	72.7	313.0	2.37	59.5	256.4

TABLE 59

## RELATIVE PRICES OF COPRA AND OTHER AGRICULTURAL PRODUCTS, 1912-1914 - 1966 (Continued)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1941	7.79	46.7	8.09	49.8	106.5	4.81	52.2	111.7						
1949	31.15	100	53.54	100	100	13.35	100	100	13.05	100	100	12.24	100	100
1950	35.98	115.5	53.24	99.4	86.1	14.14	105.9	91.7	10.02	76.8	66.5	9.71	79.3	68.7
1951	36.16	116.1	62.66	117.0	100.8	13.59	101.8	87.7	12.12	92.8	80.0	12.25	100.1	86.2
1952	24.63	79.1	38.74	72.3	91.5	14.25	106.7	135.0	11.96	91.6	115.9	11.20	91.5	115.7
1953	36.62	117.5	38.56	72.0	61.3	15.20	113.8	96.8	8.62	66.0	56.2	8.78	71.7	61.0
1954	30.76	98.7	27.46	51.3	51.9	14.91	111.7	113.1	8.70	66.7	67.5	9.55	78.0	79.0
1955	27.12	87.2	30.14	56.3	64.5	13.82	107.5	118.7	9.59	73.5	84.3	9.43	77.0	88.5
1956	26.02	83.5	36.35	67.9	81.3	13.95	104.5	125.1	8.82	67.6	80.9	9.69	79.2	94.8
1957	28.43	91.3	45.16	84.3	92.4	14.76	110.6	121.1	10.40	79.7	87.3	13.48	110.1	120.7
1958	37.70	121.0	39.43	73.6	60.8	15.28	114.4	94.6	11.89	91.1	75.3	11.19	91.4	75.5
1959	46.66	149.8	58.31	108.9	72.7	14.89	111.5	74.4	8.54	65.4	43.7	9.30	76.0	50.7
1960	39.92	128.1	60.17	112.4	87.7	16.66	124.8	97.4	9.72	74.5	58.1	12.48	101.9	79.6
1961	38.14	122.4	59.46	111.0	90.7	21.03	157.5	128.7	11.61	88.9	72.7	14.22	116.2	94.9
1962	47.31	151.8	57.81	108.0	71.1	26.77	200.5	132.0	10.84	83.1	54.7	11.61	94.8	62.4
1963	54.09	173.6	59.47	111.1	64.0	35.83	268.4	154.6	12.33	94.5	54.8	15.53	126.9	73.1
1964	56.00	179.8	64.77	121.0	67.3	28.63	214.4	119.3	14.64	112.2	62.4	15.70	128.3	71.3
1965	64.25	206.3	59.32	110.8	53.7	27.05	202.6	98.2	14.19	108.7	52.7	20.81	170.0	82.4
1966	55.57	178.4	51.77	96.7	54.2	32.35	242.3	135.8	17.11	131.1	73.5	20.52	167.6	94.0

R.P. refers to relative prices.

Muscavado (1912-28), Centrifugal (1929-66).

Sources: 1912-33 (1912-28 for copra) The Philippine Statistical Bulletin, 1934.  
 1934-41 (1929-41 for copra) Philippine Agricultural Statistics, Vol. I, 1954.  
 1949-66 Central Bank of the Philippines for copra, abaca, and sugar.  
 1949-66 Bureau of Commerce (for yellow corn, and palay ordinario in Cabanatuan).

Note: This table was prepared by Albert J. Nyberg of U. P. College of Agriculture, Los Banos. A few slight amendments have been made.

TABLE 60

COCONUT PRODUCTS: PRICES  
(Manila prices in pesos)

Year	Coconuts per 1000 nuts	Copra		Desiccated Coconut coconut per Kg.	Coconut oil per Kg.	Copra meal	Copra cake per M. T.
		Resecada per 100 Kg.	Buen corriente per 100 Kg.				
1	2	3	4	5	6	7	8
1918	36.3	19.10			0.48		
1919	43.9	29.38			0.57		
1920	67.0	34.75			0.58		
1921	47.3	16.95			0.31		
1922	29.9	16.90			0.28		
1923	33.2	19.17			0.33		
1924	35.7	20.40			0.35		
1925	34.6	23.12			0.41		
1926	41.7	21.52			0.40		
1927	38.4	19.73			0.35		
1928	38.5	19.69			0.34		
1929	35.1	16.66			0.314		
1930	29.4	13.62			0.298		
1931	21.6	7.79	6.73		0.184		27.21
1932	16.50	6.43	5.51		0.132		26.14
1933	12.61	5.03	4.41		0.113		17.66
1934	10.89	4.29	3.79		0.109		21.43
1935	28.12	9.00	8.05		0.182		27.90
1936	30.12	10.79	9.82		0.210		35.01
1937	39.87	12.97	11.66		0.240		43.20
1938		6.01			0.13		
1939		5.86			0.12		
1940		3.87			0.09		
1941		6.17		0.21	0.14	0.02	
1942				0.88			
1945		13.42					
1946		23.27			0.57	0.11	
1947		35.03		0.90	0.80	0.16	
1948		51.49		0.94	0.98	0.14	
1949		31.15		0.68	0.62	0.09	
1950		35.98		0.66	0.68	0.11	

TABLE 60

COCONUT PRODUCTS: PRICES (Continued)  
(Manila prices in pesos)

Year	Coconuts per 1000 nuts	Copra		Desiccated Coconut		Copra	
		Resecada per 100 Kg.	Buen corriente per 100 Kg.	coconut per Kg.	oil per Kg.	Copra cake per meal	M. T.
1	2	3	4	5	6	7	8
1951		36.16		0.67	0.70	0.12	
1952		24.63		0.53	0.46	0.15	
1953		36.62		0.67	0.69	0.12	
1954		30.76		0.61	0.57	0.10	
1955		27.12		0.56	0.48	0.11	
1956		26.02		0.54	0.45	0.12	
1957		28.43		0.54	0.47	0.11	
1958		37.70		0.63	0.65	0.11	
1959		46.66		0.73	0.80	0.15	
1960		39.92		0.61	0.70	0.15	
1961		38.14		0.49	0.66	0.14	
1962		47.31		0.72	0.79	0.22	
1963		54.09		0.90	0.88	0.26	
1964		56.00		0.98	0.96	0.23	
1965		65.38		1.05	1.14	0.26	

Sources: Column 2 - 1918-1931 - Philippine Statistical Review, Vol. 1, #1, 1934.

1932-1937 - Philippine Statistical Review

1937 - Third Quarter, Department of Agriculture and  
Commerce, Manila, Bureau of Printing, 1937.

1938-1949, 1946-1965 - No data available.

Column 3 - 1918-1928 - Bureau of Commerce and Industry, etc.

1931-1937 - Philippine Statistical Review.

1937 - Third Quarter.

1938-1940 - The Philippine Exporters Association  
Yearbook 1958-9.

1941, 1946-1965 - Central Bank Statistical Bulletin  
September, 1965 (Vol. XVII, No. 3).

Column 4 - 1931-1937 - Philippine Statistical Review.

1938-1941, 1946-1965 - No data available.

TABLE 60

Sources: (Continued)

Column 5 - 1929-1940 - No data available.  
1941, 1946-1965 - Central Bank Statistical Bulletin.

Column 6 - 1918-1930 - Bureau of Commerce and Industry, etc.  
1931-1937 - Philippine Statistical Review.  
1938-1940 - No data available.  
1941, 1946-1965 - Central Bank Statistical Bulletin.

Column 7 - 1929-1940 - No data available.  
1941, 1946-1965 - Central Bank Statistical Bulletin.

Column 8 - 1931-1937 - Philippine Statistical Review.  
1938-1941, 1946-1965 - No data available.

**APPENDIX III**

**BIBLIOGRAPHY**

## BIBLIOGRAPHY

### The Philippines and the World Coconut Industry

#### Books

Child, Reginald. Coconuts. London: Longmans, Green, and Company, Ltd., 1964.

Snodgrass, Katharine. Copra and Coconut Oil: Fats and Oils Studies Number 2. U. S. A.: Stanford University Press, 1928.

Zafra, Urbano A. Philippine Economic Handbook, 1960. Washington, D. C.: Westland Printing Company, 1960.

#### Periodicals

FAO Coconut Situation. November, 1965.

Salvosa, Benjamin. New Foundations for Strengthening the Coconut Industry (PHILCOA Publication), January, 1956.

### Coconuts in the Philippine Economy

R. P. Bureau of the Census and Statistics. Census of the Philippines: 1960. Agriculture, Vol. II.

R. P. Central Bank. Annual Report. 1949-1965.

R. P. Central Bank. Statistical Bulletin: Statistical Appendix to the Seventeenth Annual Report. December, 1965.

## Historical Background

### Books

Blair, Emma Helen and Robertson, James Alexander.  
The Philippine Islands 1493-1898, Vol. I.

Coronel, Herminia M. The Coconut Industry in the Philippines.  
Diliman, Quezon City: College of Business  
Administration, University of the Philippines, 1953.

Huke, Robert E. Shadows on the Land. Manila: Bookmark,  
Inc., 1963.

Miller, Hugo H. Principles of Economics as Applied to the  
Philippines. U. S. A.: Ginn and Company, 1932.

The Coconut Industry in the Philippines. Philippines  
(Commonwealth), Department of Agriculture and  
Commerce: Bureau of Printing, 1939.

Yan, Roque D., Jr. Our Copra and Coconut Oil Industry.  
Diliman, Quezon City: College of Business  
Administration, University of the Philippines,  
1950-1954.

### Periodical

Salvosa, Benjamin. A Forward Look for the Coconuts (PHILCOA  
Publication), 1957.

### Unpublished Material

"Problems of Philippine Copra and Coconut Oil - Their Settings,  
Measures, and Possible Solutions." Economic Research  
Department, PHILCOA, March 25, 1964 (Typewritten.)

### Geographical Location

- R. P. Bureau of the Census and Statistics. Census of the Philippines: 1939, 1948, and 1960. Agriculture, Summary Volumes.
- Cooke, F. C. The Coconut Industry of the Philippine Islands. Department of Agriculture, Straits Settlements and Federated Malay States, January 6, 1936.
- Gothwaite, E. D. Trade in Philippine Copra and Coconut Oil. Department of Commerce, Bureau of Foreign and Domestic Commerce: Washington Government Printing Office, 1925.
- Huke, Robert E. Shadows on the Land. Manila: Bookmark, Inc., 1963.

### Production of Coconuts

#### Books

- Barrett, Otis Warren. Coconut Culture. Manila: Bureau of Printing, 1911.
- Child, Reginald. Coconuts. London: Longmans, Green, and Company, Ltd., 1964.
- Cooke, F. C. The Coconut Industry of the Philippine Islands. Department of Agriculture, Straits Settlements and Federated Malay States, 1936.
- Coronel, Herminia M. The Coconut Industry in the Philippines. Diliman, Quezon City: College of Business Administration, University of the Philippines, 1953.
- Gothwaite, E. D. Trade in Philippine Copra and Coconut Oil. Department of Commerce, Bureau of Foreign and Domestic Commerce: Washington Government Printing Office, 1925.

- Guzman, Luz Lopez. The Coconut Industry and Its Problems.  
Diliman, Quezon City: College of Business  
Administration, University of the Philippines. 1957.
- Huke, Robert E. Shadows on the Land. Manila: Bookmark, Inc.,  
1963.
- Kintanar, Flora Logarta. An Economic Evaluation of Government  
Efforts in Improving the Coconut Industry. Cebu City:  
Graduate School University of San Carlos, 1958.
- Miller, Hugo H. Economic Principles as Applied to the  
Philippines. U. S. A.: Ginn and Company, 1932.
- Snodgrass, Katharine. Copra and Coconut Oil: Fats and Oils  
Studies Number 2. U. S. A.: Stanford University  
Press, 1928.
- Uichanco, L. B. Philippine Agriculture. Vol. I. Los Banos,  
Laguna: College of Agriculture, University of the  
Philippines, 1959.
- Villaroel, Lourdes F. The Coconut Industry in the Philippines.  
Diliman, Quezon City: College of Business  
Administration, University of the Philippines, 1956.
- Yan, Roque D., Jr. Our Copra and Coconut Oil Industry.  
Diliman, Quezon City: College of Business Administration,  
University of the Philippines, 1953-1954.

#### Periodicals

- Maranon, Joaquin. Coconut Problems of the Pacific Area.  
(PHILCOA Publication), March, 1958.
- Salvosa, Benjamin. A Forward Look for the Coconuts.  
(PHILCOA Publication), 1957.

### Other Printed Materials

Brief Submitted by the Agusan Coconut Company Before the Joint Preparatory Committee on Philippine Affairs.  
September, 1937.

Brief Submitted by the Philippine Coconut Oil Mills Before the Joint Preparatory Committee on Philippine Affairs.  
September, 1937.

Brief Submitted by the Philippine Desiccated Coconut Industry Before the Joint Preparatory Committee on Philippine Affairs. September, 1937.

Jacobson, H. O. Coconuts in the Philippines. San Francisco, California: Philippine Islands - Panama - Pacific International Exposition Board, May 15, 1946.

The Philippine Coconut Industry: Its Progress and Problems. 1937.

The Philippine Technical Information Sheets. Manila, 1962.

### Unpublished Material

"Problems of Philippine Copra and Coconut Oil - Their Settings, Measures, and Possible Solutions." Economic Research Department, PHILCOA, March 25, 1964. (Typewritten.)

### Marketing of Coconut Products

#### Books

Coronel, Herminia M. The Coconut Industry in the Philippines. Diliman, Quezon City: College of Business Administration, University of the Philippines, 1953.

Gothwaite, E. D. Trade in Philippine Copra and Coconut Oil. Department of Commerce, Bureau of Foreign and Domestic Commerce: Washington, Government Printing Office, 1925.

- Kintanar, Flora Logarta.** An Economic Evaluation of Government Efforts in Improving the Coconut Industry. Cebu City: Graduate School, University of San Carlos, 1958.
- Pal, Agaton P.** The Resources, Levels of Living and Aspirations of Rural Households in Negros Oriental. Diliman, Quezon City: CDRC Publications, University of the Philippines, 1963.
- Snodgrass, Katharine.** Copra and Coconut Oil: Fats and Oils Studies Number 2. U. S. A.: Stanford University Press, 1928.
- Tiongson, Fabian A.** Improved Merchandizing of Selected Farm Products. Diliman, Quezon City: CDRC Publications, University of the Philippines, 1964.
- Wernstedt, Frederick L.** The Role and Importance of Philippine Inter-Island Shipping and Trade. Ithaca, New York: Cornell University, 1957.
- Worcester, Dean C.** Coconut Growing in the Philippine Islands. U. S. Bureau of Insular Affairs, 1911.
- Yan, Roque D., Jr.** Our Copra and Coconut Oil Industry. Diliman, Quezon City: College of Business Administration, University of the Philippines, 1953-1954.

#### Periodicals

- "Coconut: Oil Product Faces Problem," The Manila Times, July 26, 1966.
- "Copra Trading Plan Set," The Manila Times, July 29, 1966.
- Ocampo, Satur C. "Coconut: Aliens Hold Copra Trade," The Manila Times, July 28, 1966.

## Reports

Eala, Godofredo C., Dolar, Salvador G., and Ilag, Leodegario M.  
Farm Management and Cultural Practices on Coconut  
Farms in the Philippines. Research Project #1372.  
Los Banos, Laguna: College of Agriculture, University  
of the Philippines.

Final Report: An Economic Analysis of Philippine Domestic  
Transportation: Domestic Water Transportation and  
Ports. Vol. III. Report prepared for NEC-Philippines.  
SRI Project # I U-1554. Stanford Research Institute.

The Demand for Transportation Commodity Flows and Passenger  
Movements. Vol. II. Report prepared for NEC-  
Philippines. SRI Project # I U-1554. Stanford Research  
Institute.

Nationalization of Copra Trade. Economic Research Department,  
PHILCOA. (Unpublished report.)

Nyberg, Albert J. "Notes on Marketing of Coconut Products."  
Los Banos, Laguna: College of Agriculture, University  
of the Philippines, 1966. (Unpublished report.)

PHILCOA Report 1954-1955. PHILCOA, 1955.

"Problems of Philippine Copra and Coconut Oil - Their Settings,  
Measures, and Possible Solutions." Economic Research  
Department, PHILCOA, March 25, 1964. (Unpublished  
report.)

## Other Printed Materials

Cost of Production of Coconuts. Division of Agricultural Economics,  
Department of Agriculture and Natural Resources, 1960.

The Philippine Coconut Industry: Its Progress and Problems.  
Bureau of Plant Industry, 1937.

**Domestic Policies: The Attempt to Promote the Development of the  
Coconut Industry**

**Books**

- Coronel, Herminia M. The Coconut Industry in the Philippines. Diliman, Quezon City: College of Business Administration, University of the Philippines, 1953.**
- Kalaw, Maximo Manguiat. The Coconut Industry. Manila: Bureau of Printing, 1940.**
- Kintanar, Flora Logarta. An Economic Evaluation of Government Efforts in Improving the Coconut Industry. Cebu City: Graduate School, University of San Carlos, 1958.**
- Miller, Hugo H. Economic Principles as Applied to the Philippines. U. S. A.: Ginn and Company, 1932.**
- Yan, Roque D., Jr. Our Copra and Coconut Oil Industry. Diliman, Quezon City: College of Business Administration, University of the Philippines, 1953-1954.**
- Zafra, Urbano A. Philippine Economic Handbook 1960. Washington, D. C.: Westland Printing Company, 1960.**

**Other Printed Materials**

- Fair Copra Trading with Moisture Meters. PHILCOA, February 15, 1958.**
- Philippine Technical Information Sheets. Manila, 1962.**
- Salvosa, Benjamin. New Foundation for Strengthening the Coconut Industry. PHILCOA, January, 1956.**
- Sixth PHILCOA Report: 1959-1960. PHILCOA, 1960.**

International Policies: Tariffs, Taxes, and Quotas and Their  
Significance for Philippine Coconut Products

Documents

- U.N. GATT. International Trade 1957-1958: The Contracting Parties to the GATT. Geneva, July, 1959.
- U.N. "Trade in Agricultural Commodities in the United Nations Development Decade," Part III. U.N. Conference on Trade and Development. Vol. IV, 1964.
- U.S. Senate. Committee Report. Tariff Treatment of Copra, Palm Nuts, and Palm Nut Kernels, and the Oils Crushed Therefrom. Report No. 1009, 89th Congress, 2nd Session, 1966.
- U. S. Tariff Commission. Fats, Oils, and Oil-Bearing Materials in the United States. Washington: U. S. Government Printing Office, December 15, 1941.
- U. S. Tariff Commission. Report to the Congress on Certain Vegetable Oils, Whole Oil, and Copra. Report No. 41, 2nd Series. Washington: U. S. Government Printing Office, 1932.
- U. S. Tariff Commission. U. S. -Philippine Trade with Special Reference to the Philippine Independence Act and Other Recent Legislation. Vol. I. Washington: U. S. Government Printing Office, January, 1937.
- U. S. Tariff Commission. Tariff Schedules of the U. S. : Annotated. Washington, D. C. : U. S. Government Printing Office, 1963 & 1965.

Books

- Constitution of the Philippines (Incorporates the Laurel-Langley Agreement). 5th ed. Manila: Central Book Supply, Inc., 1964.

Golay, Frank H. The Revised United States - Philippine Trade Agreement of 1955 (Data Paper #23). S. E. A. Program: Cornell University, 1956.

Kintanar, Flora Logarta. An Economic Evaluation of Government Efforts in Improving the Coconut Industry. Cebu City: Graduate School, University of San Carlos, 1958.

Miller, Hugo H. Economic Principles as Applied to the Philippines. U.S.A.: Glinn and Company, 1932.

Zafra, Urbano A. Philippine Economic Handbook 1960. Washington, D. C.: Westland Printing Company, 1960.

#### Periodicals

"Coconut Oil Industry Faces Liquidation If L-L Pact Stays," The Manila Times, May 30, 1966.

"Coconut: Oil Product Faces Problem," The Manila Times, July 26, 1966.

"FM Intercession Urged on Lifting of Coconut Oil Duty - Industry Plea," The Manila Times, August 15, 1966.

"L-L Accord End: Coconut Industry Effects Minimized," The Manila Times, May 30, 1966.

Ocampo, Satur C. "Coconut Industry: Despite Neglect Growth Continues, Production Rises," The Manila Times.

"U. S. President Johnson Scraps 3-Cent Duty on Coconut Oil," The Coco News, April, 1966.

## Reports

Brief Submitted by the Agusan Coconut Company Before the Joint Preparatory Committee on Philippine Affairs.  
September, 1937.

Brief Submitted by the Philippine Coconut Oil Mills Before the Joint Preparatory Committee on Philippine Affairs.  
September, 1937.

Brief Submitted by the Philippine Desiccated Coconut Industry Before the Joint Preparatory Committee on Philippine Affairs. September, 1937.

"Discriminatory Tariffs on Coconut Oil Trade Barriers,"  
PHILCOA Report. Economic Research Department,  
PHILCOA, 1966 (Unpublished report.)

"Implications of the European Common Market for International Trade in Copra and Coconut Oil," Economic Research Department, PHILCOA April 23, 1963. (Unpublished report.)

Mutuc, Amelito R. The Philippine-American Coconut Oil Trade Problem. Prepared in connection with the Philippine Request for the Removal of the U. S. Duty and Processing Tax on Coconut Oil. Manila, 1964.

"The European Common Market Proposals for Oils and Fats as They Affect the World's Coconut Economy," Economic Research Department, PHILCOA. (Unpublished report.)

Zafra, Urbano A. "The U. S. Excise Tax on Philippine Coconut Oil," Economic Research Department, PHILCOA.

## Other Printed Materials

Budget for the Coconut Oil Excise Tax Fund Collected on and After January 1, 1939. Manila: Bureau of Printing, 1940.

PHILCOA Report 1954-1955. PHILCOA, 1955.

Salvosa, Benjamin. New Foundations for Strengthening the Coconut Industry (PHILCOA Publication), January, 1956.