THE PACE AND PATTERN OF PHILIPPINE ECONOMIC GROWTH: 1938, 1948 AND 1956

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E R R A T A

Page 60: The official quantity data for the three types of fishing are obtained from different sources.[55] For commercial fishing the catch reported by operators in the industry is used after being multiplied by three because of under reporting.[56]

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ERRATA

Page v: the page for Appendix I-1 should read "33" instead of "31"

2: in the fourth line following Equation I-1 "peso" should read "pesos"

2: insert a period after the third line of Equation I-3

3: Equation I-7 should read "$C_{00} = \frac{1}{2}p_0q_0$,
$C_{01} = \frac{1}{2}p_0q_1$,
and $C_{02} = \frac{1}{2}p_0q_2$."

instead of "$C_{00} = \frac{1}{2}P_0Q_0$,
$C_{01} = \frac{1}{2}P_0Q_1$,
and $C_{02} = \frac{1}{2}P_0Q_2$.

16: "Manufacturing, n.e.c." should read "Manufacturing, not included elsewhere"

30: col. (6) for Government consumption should read "617.0" instead of "617.9"

40: insert "which" at the end of the eighth line

40: in the fourth line of note 20 "Onate" should read "Oñate"

60: The following two sentences belong after the fifth sentence of the second paragraph (i.e., before the sentence beginning "Fishpond production....") and begin a new paragraph:

The official quantity dataifor the three types of fishing are obtained from different sources.[55] For commercial fishing the reports of operators are used after being multiplied by three because of under-reporting.[56]

64: in the third line of the second paragraph "value of product" should read "gross value product"

67: col. (3) for Textiles and finished textile products should read "42.4" instead of "45.8"

71: col. (2) for Vegetable oils should read "n.e." instead of "---"

79: in the caption for line (9) insert "yarn" after "rayon"

81: in the eighth line of text from the bottom delete the hyphen appearing between "value" and "product"

81: in the sixth line of text from the bottom "no" should read "one"

(over)

Page 95: in the second line of note 147 "production not elsewhere classified" should read "production, not included elsewhere"
with the quotation marks included

102: in the third line of the Source for Col. (2) insert "pay" after "months"

128: the figure for Corn in 1956 should read "901.4" instead of "910.4"

135: in the last line of the second full paragraph "units" should read "nuts"

144: in the next to the last line of the third paragraph insert "of" after "average"

146: the figure for Milled corn products in 1956 should read "901.4 (c)" instead of "910.4 (c)"

157: the caption for line (2) should read "Index of the value of government construction" instead of ""Index of government construction"

165: in the Notes "year" should read "years"

189: in the last line of text "to coverage" should read "in coverage"

191: in the second and third lines delete "and private construction"

206: col. (1) for Mining & quarrying should read "300.3" instead of "300.0"

210: in the first line of the Notes insert "million" after "₱ 9,440"

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Department of Asian Studies
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FOREWORD

Students of the Philippines are aware that the economy of that country has been undergoing rapid changes throughout the postwar period as economic growth, industrialization and Filipinization have been aggressively promoted by public policies. Such changes during the postwar period have been adequately documented by the available Philippine social accounts. On the other hand, observers of economic change in the Philippines have been frustrated and ineffectual in their efforts to relate postwar levels of Philippine material well-being to levels achieved prior to World War II. It has been customary, although statistically irresponsible, in making such a comparison, to take the highly tentative estimate of Philippine national income in 1939, prepared by U. S. Treasury Attache Lawrence Hebbard while confined during World War II in Santo Tomas internment camp, and to inflate this estimate by an available price series. Such a procedure permits a tottery comparison of prewar and postwar which, when converted to a per capita basis, has been used to support ambitious claims for the postwar Philippine economy.

Professor Goodstein has meticulously constructed indexes of Philippine real product for 1938, 1948 and 1956, using as appropriate indicators of output the best available measures of actual output, employment, commodity input or stock of capital. His study makes three substantial contributions to our understanding of the Philippine economy: First, he makes a definite comparison of aggregate Philippine real product for 1938, 1948 and 1956. This comparison confirms that postwar growth in per capital real product has been rapid. At the same time, his study establishes that the level of per capita real product in 1956 has increased only modestly over that of 1938 -- "slightly more than 20% higher". Second, while the results of his study essentially confirm the official Philippine social accounts, his detailed disaggregation of Philippine real product for 1956 reveals a number of important divergences from the official accounts. Most striking is the estimate of the real product of agriculture, forestry and fishing in 1956 of ₱2,598 million or 30.5 per cent of aggregate real product whereas the official estimate is ₱3,316 million or 37.1 per cent. Third, in the process of explaining how he derived his detailed estimates of Philippine real product and in evaluating them, Professor Goodstein provides a wealth of information about Philippine economic statistics. For the graduate student embarking on study of the Philippines, this will be the most valuable contribution of the study.

Students of the Philippine economy are in debt to Professor Goodstein for his painstaking statistical analysis of Philippine economic growth. The Cornell Southeast Asia Program is pleased to be able to make available widely these highly significant research results.

Frank H. Golay

Cornell University
Ithaca, New York
July, 1962

PREFACE

The Republic of the Philippines has been undergoing substantial economic changes in the years since World War II. This study is concerned with measuring and analyzing the pace and pattern of Philippine economic growth between 1948 and 1956 and the position of the economy in 1956 as compared to 1938. To accomplish these aims entirely new estimates of Philippine real product have been prepared. In the process of explaining how these estimates are derived and in evaluating them considerable information about Philippine economic statistics is provided. The study thus may be of use both for its end results and for the discussion along the way.

This Data Paper owes its existence in large part to Professor Frank H. Golay of Cornell University. He first suggested the subject and maintained a close interest in the project as it was carried through to its present form. The Paper is a modified version of the writer's doctoral dissertation and the acknowledgements made in the dissertation bear repeating.

A considerable debt is due Professors Morris A. Copeland, Chandler Morse, and Professor Golay not only for the help they provided on this project but also for their overall influence on the writer's approach to economic problems. Professors Hugh G. Hansen and Edward A. Lutz also were helpful in the final stages of the dissertation.

Gratitude must be expressed, too, to the numerous persons in the Philippine Government who generously provided statistical information and patiently answered numerous questions. Especially helpful were Mrs. Fanny Cortes Garcia and Messrs. Perfecto R. Franche, Dimas A. Maulit, Peregrino S. Reyes, and Ruben F. Trinidad. In addition the writer benefited from discussions with Dr. William I. Abraham of the United Nations Statistical Office and several United States Government experts who had been on economic and statistical missions to the Philippines.

Much of the research for this study was done at the Library of Congress, the New York Public Library, and the libraries of Cornell University and the United Nations, and thanks are due for the services provided by the personnel of these institutions and for the aid in obtaining material provided by the staff of the library of The University of the South. The generousity of the Philippine Studies Program at the University of Chicago in lending the writer a personal copy of the rare summary volume of the 1948 Philippine Census of Population and Agriculture deserves special mention.

Financial aid was received from the Southern Fellowships Fund and the Faculty Research Grants Committee of The University of the South and this is gratefully acknowledged.

Many friends at Cornell and Sewanee provided technical assistance and comforting encouragement, and Anita, Sarah and Eban were - well - Anita, Sarah and Eban.

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LIST OF ABBREVIATIONS AND SYMBOLS

est.	estimated
km.	kilometers
m.	million
n.e.	not estimated
n.e.c.	not elsewhere classified
₱	Philippine pesos
T.	Table
t.	thousand
tons	metric tons
---	nil or negligible

CHAPTER I

PHILIPPINE REAL PRODUCT: ITS MEASUREMENT, THE RESULTS AND WHAT THEY SHOW

I. NATURE AND SIGNIFICANCE OF REAL PRODUCT

The product of a nation refers to the total value of goods and services produced therein during a specified period of time, usually a year.

Real product is the output for a series of years valued not in the prices prevailing in each of the years but rather in the prices of a selected year or group of years. Since the effects of price fluctuations on the value of output are therefore absent the measure provides a means of examining changes in the volume of output. Because the real product of a nation does comprehend the total volume of production it is of considerable use in studying economic activity in the aggregate. Indeed, the growth of an economy is often defined as an increase in its real product per capita.[1]

Real product can be measured by industrial origin (agriculture, manufacturing, services, etc.) or by final disposition (private consumption, government consumption, domestic investment and export). The measurement of real product thus provides an opportunity to study not only the pace of aggregate economic activity but its pattern as well.

II. MEASUREMENT OF PHILIPPINE REAL PRODUCT

Official estimates of Philippine realiproduct have been published,[2] but the figures are admittedly rough, do not carry much detail, and cover only

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[1]See, for example, W. Arthur Lewis, The Theory of Economic Growth,i pp. 9-10, and Simon S. Kuznets, Six Lectures on Economic Growth, pp. 13-15.

[2]Ruben F. Trinidad, "A Measurement of the Nation's Output at Constant Prices," Republic of the Philippines, Office of Statistical Coordination and Standards, Statistical Reporter, III (April, 1959) 23-31. The issues of April, 1960 and April, 1961 contain the data for more recent years.

the postwar period. As a consequence, entirely new data have been prepared in this study. The new estimates are of Philippine real product in 1956 prices for the years 1938, 1948 and 1956, by industry of origin in detail. The information available does not readily permit the preparation of detailed data on the final disposition of real product; so only rough estimates are made of that. To add to understanding of the statistics, an elaboration of the concept of real product by industrial origin and an explanation of how it is made operational in this study are provided in this section.[3]

Basic to the meaning of real product by industrial origin is the concept of product originating. The value of production (or gross value product) of an industry in Years 0, 1, 2, etc. can be expressed as

$$\begin{aligned} G_0 &= P_0Q_0, \\ G_1 &= P_1Q_1, \\ \text{and } G_2 &= P_2Q_2, \end{aligned} \qquad \text{(I-1)}$$

where G is the gross value product, Q is the volume of the product and P is its price. But while P_0Q_0, P_1Q_1, P_2Q_2, etc. represent the value of production flowing out of the industry they do not represent the value of production originating therein. An output of one million peso (₱ 1 million) worth of coconut oil does not mean, for example, that ₱ 1 million worth of output originated in the coconut oil industry, for included in the figure are the values of copra, power, insurance services and other commodities used in the production of the coconut oil. To obtain the value of output originating (or net value product) the total value of goods and services used has to be deducted. That is, if

$$\begin{aligned} C_0 &= \Sigma p_0q_0, \\ C_1 &= \Sigma p_1q_1, \\ \text{and } C_2 &= \Sigma p_2q_2, \end{aligned} \qquad \text{(I-2)}$$

where C is the total cost of commodity inputs, q is the volume of each commodity input and p is its price, then the net value product, N, can be expressed as

$$\begin{aligned} N_0 &= G_0-C_0, \\ N_1 &= G_1-C_1, \\ \text{and } N_2 &= G_2-C_2 \end{aligned} \qquad \text{(I-3)}$$

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[3] The following works are useful sources on the theory, practices and problems of real product measurement: C. F. Carter, W. B. Reddaway & Richard Stone, The Measurement of Production Movements; J. B. D. Derksen, "Intertemporal Comparisons of Real National Income: An International Survey," International Association for Research in Income and Wealth, Income and Wealth, Series I, pp. 245-266; Milton Gilbert et al., Comparative National Products and Price Levels; Milton Gilbert and Irving B. Kravis, An International Comparison of National Products and the Purchasing Power of Currencies; J. L. Nicholson, "Some Problems in the Measurement of Real National Income," Income and Wealth, Series IV, pp. 145-166; W. B. Reddaway, "Some Problems in the Measurement of Changes in the Real Geographical Product," Income and Wealth, Series I, pp. 267-292; Richard Stone, Quantity and Price Indexes in National Accounts; United Nations, Statistical Commission, Price and Quantity Indexes in National Accounting; United Nations, Statistical Office, Index Numbers of Industrial Production.

The net value product for two or more industries, and thus for the economy as a whole, is derived by totaling the product originating in the industries. In other words,

$$\begin{aligned} \Sigma N_{oi} &= \Sigma (G_o - C_o), \\ \Sigma N_1 &= \Sigma (G_1 - C_1), \\ \text{and} \quad \Sigma N_2 &= \Sigma (G_2 - C_2). \end{aligned} \qquad \text{(I-4)}$$

Since the cost of commodity inputs is excluded, the net value product for two or more industries provides a measure of total output which is free from duplication. It avoids counting the value of a given commodity more than once should the value be reflected at more than one stage of the production process, as is likely.

In this study net value product is measured gross of capital consumed; it refers to all productive activity within the territorial limits of the Philippines whether the resulting income accrues to residents of the Philippines or of other countries; and it includes indirect taxes. Thus the output originating is approached on the basis of gross domestic product valued at market prices.

The real product for Years 0, 1, 2, etc. refers to the output originating in an industry or group of industries valued at the prices of a selected (base) year or group of years. Setting Year 0 as the base year the real product originating in a single industry during Years 0, 1, and 2 can be expressed as

$$\begin{aligned} N_{oo} &= G_{oo} - C_{oo}, \\ N_{o1} &= G_{o1} - C_{o1}, \\ \text{and } N_{o2} &= G_{o2} - C_{o2}, \end{aligned} \qquad \text{(I-5)}$$

if

$$\begin{aligned} G_{ooi} &= P_o Q_o, \\ G_{o1} &= P_o Q_1, \\ \text{and } G_{o2} &= P_o Q_2 \end{aligned} \qquad \text{(I-6)}$$

and

$$\begin{aligned} C_{oo} &= \Sigma P_o Q_o, \\ C_{o1} &= \Sigma P_o Q_1, \\ \text{and } C_{o2} &= \Sigma P_o Q_2. \end{aligned} \qquad \text{(I-7)}$$

And for a group of industries the equations are

$$\begin{aligned} \Sigma N_{oo} &= \Sigma (G_{oo} - C_{oo}), \\ \Sigma N_{o1} &= \Sigma (G_{o1} - C_{o1}), \\ \text{and } \Sigma N_{o2} &= \Sigma (G_{o2} - C_{o2}). \end{aligned} \qquad \text{(I-8)}$$

Ideally the real product should be measured by taking the difference between the real value of output and the real value of commodity inputs for

each and every commodity produced -- i.e., by using what is known as the double indicator method for each good and service and covering all of them directly. But the weighting and indicator data necessary for covering every commodity separately are simply not available in any country,[4] while the information needed for double indicators is especially lacking in countries like the Philippines.

Since the ideal is not attainable in practice some procedural modifications are necessary. In this study, single indicators (e.g., output, labor input, a commodity input, or the stock of capital) are employed to measure the net value product in real terms. When suitable direct information is not available for indicating the real product of an industry, the data for a related industry or group of industries are used.[5] In some cases, an indicator directly corresponding to only a portion of one weight class and possibly to part of another weight class is used to cover the one weight class entirely (e.g., the real product originating in private construction aside from the construction of houses by owner-occupants is measured by a limited number of construction materials which find other uses as well); also, on occasion, one indicator is employed to cover diversified activities within a single weight class (e.g., the real product originating in various kinds of domestic service is measured by the number of domestic servants as a whole).

In estimating real product for an economy like that of the Philippines not only do problems of procedure arise but also problems of definition. There is little dispute that goods and services sold for money represent production. Restricting the concept of output to commodities exchanged for money, however, leads to a very incomplete picture of economic activity in countries like the Philippines. At the same time, the inadequacy of monetary exchange as a standard makes it much more difficult to decide what to include.

In this study the following criteria are followed insofar as is possible.[6] All primary output[7] is included whether the commodities are sold,

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[4]Even if they were available the work involved in utilizing them would be formidable.

[5]This procedure also is followed for convenience when the weight of an industry is not significant.

[6]The criteria are an elaboration of those recommended in United Nations, Statistical Office, A System of National Accounts and Supporting Tables, pp. 4-5, 8, 21. See also the discussion of the recommendations in Morris A. Copeland, "The Feasibility of a Standard Comprehensive System of Social Accounts," Conference on Research in Income and Wealth, Studies in Income and Wealth, Vol. XX, pp. 31-33.

[7]Primary output refers to agriculture (including forestry and fishing) and mining and quarrying.

bartered, added to a producer's inventories or consumed by him. In the case of non-primary output all commodities within a producer's own trade are included, but goods and services outside his trade are counted only if exchanged or added to his inventories. Thus food processing, the manufacture of household and personal equipment and supplies, and the provision of services are excluded from production if carried on by households solely for the needs of their members.[8] Few would claim these exclusions to be desirable; they exist because of the seemingly intractable problem of how to value the activities.

One type of purely household output is included, however - the services provided by dwellings to their owners. The problem of valuation exists for this type of output too, as will be seen, because of the small amount of renting that is done,[9] but for the same reason it would be quite misleading to include only the dwelling services actually exchanged.

The coverage of production also extends to own-account capital formation. A producer (or his employees) may produce not only the commodities of his trade but also the constructions and equipment necessary to it. Given the importance of non-commercial activity and the simple nature of much of the capital in countries like the Philippines the value of own-account capital formation represents a significant part of total fixed investment. Most of it is likely to occur in dwelling ownership and agriculture.

The unsold output that is included in production is in general valued at the price for which the particular commodity or a close substitute is sold in the same locality or region or in similar localities or regions. For example, in the case of crops the prices received by farmers are appropriate to valuing output. The alternative of using retail or even wholesale prices in an urban area leads to the coverage of distributive activity which does not exist in fact.

With the definition of Philippine real product by industrial origin established, the next step is to elaborate upon the estimating procedure. Putting equations (I-8) in a slightly different form it is seen that

$$\begin{aligned} \Sigma N_{oo} &= \Sigma\left[(G_{oo}-C_{oo}) \times \frac{(G_{oo}-C_{oo})}{(G_{oo}-C_{oo})}\right], \\ \Sigma N_{o1} &= \Sigma\left[(G_{oo}-C_{oo}) \times \frac{(G_{o1}-C_{o1})}{(G_{oo}-C_{oo})}\right], \qquad \text{(I-9)} \\ \text{and} \quad \Sigma N_{o2} &= \Sigma\left[(G_{oo}-C_{oo}) \times \frac{(G_{o2}-C_{o2})}{(G_{oo}-C_{oo})}\right]. \end{aligned}$$

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[8] A domestic servant living with a household is not considered a member of it. Rather he is thought of as selling his services to the household in exchange for money or subsistence.

[9] In the Philippines in 1956 only about 6% of all households rented the dwelling units in which they lived (Republic of the Philippines, Philippine Statistical Survey of Households, PSSH Bulletin, Series 2, Demographic and Socio-economic Data, Table 23).

That is, the real product originating in two or more industries, or in the economy as a whole, during any one year is determined (1) by the net value product of each industry in the base year and (2) by the level of real product originating in each during the given year as compared to the base year. The estimating procedure thus has two phases: the measurement of the net value product of each industry during the base year, 1956, and the measurement of the real product originating in each during the other years as compared to 1956.

The year 1956 is used as the weight base in this study for several reasons. One is that the writer had access to a copy of the official national income worksheets for that year.[10] Also, more details are available about the 1956 estimates than those for any other year.[11] Another reason, though less important, is that the use of a recent year as base facilitates the inclusion of new industries.

The use of 1948 and 1938 for purposes of comparison permits an examination of Philippine economic growth in the postwar period and of the position of the economy in 1956 as compared to prewar. These particular two years were chosen because census data are available.

Before proceeding to the estimates a word about the statistical material utilized in preparing them is appropriate. A good deal of the material used represents the best available rather than the most desirable data. Statistical information in abundant quantity and of high quality is a scarce item in the Philippines.[12] Every effort has been made to evaluate the data which have been used, and in some cases adjustments have been possible. Where deficiencies could not be eliminated they are described for the reader's consideration. The estimates are not perfect but the writer firmly believes that they are sufficiently accurate to support the conclusions derived from them.

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[10]Thanks are due to Professor Frank H. Golay for enabling the writer to use the copy, to Nicolaas G. M. Luykx, III for making it, and to the Philippine national income officials for permitting him to make it.

[11]Ruben F. Trinidad, An Inquiry into the Sources and Methods of National Income Accounting in the Philippines is devoted to an intensive description and evaluation of the data. Trinidad is a national income expert in the Philippine government.

[12]This is not intended to disparage the considerable progress that has been made in Philippine statistics during the past few years. Indeed, the possibility of preparing any worthwhile new estimates of Philippine real product would have been exceedingly slim had such progress not occurred. The latest developments in Philippine statistics can be followed in Statistical Reporter and in Philippine Statistician, the journal of the Philippine Statistical Association.

III. THE RESULTS

The new estimates of Philippine real product are shown in Table I-1. The real product in Columns (5) and (6) for each industry is obtained by multiplying the net value product in Column (7) by the indicated comparative real product for the industry on a 1956 base. Since the indicators are, for analytical convenience, shown on 1938 and 1948 bases, the actual statistical procedure for obtaining the results in Columns (5) and (6) involves multiplying each industry net value product in Column (7) by the reciprocals of the figures in Columns (2) and (4). For each group of industries the real product in 1938 and 1948 is obtained by totaling the figures in Columns (5) and (6) for the component industries and any indirect taxes and capital consumption allowances assigned or allocated to the group as a wholes The values for indirect taxes andscapital consumption allowances in 1938 and 1948 are calculated on the assumption that the group real product including them shows the same movement over time as the group real product excluding them.

In Chapters II and III the estimates are evaluated in considerable detail, and the evaluation should be kept in mind when viewing specific figures in Table I-1 and in the analysis which follows. However, unless the analysis would otherwise be misleading, the biases are not mentioned in this chapter nor are they explicitly allowed for in the write-up of the data beyond the industry-division level (i.e., agriculture, mining, manufacturing, etc.).

TABLE I-1

PHILIPPINE REAL PRODUCT BY INDUSTRIAL ORIGIN, 1938, 1948 AND 1956, in 1956 PRICES

Industry	Indicator (1938 = 100.0) 1948 (1)	Indicator (1938 = 100.0) 1956 (2)	Indicator (1948 = 100.0) 1938 (3)	Indicator (1948 = 100.0) 1956 (4)	Net Value Product (million pesos) 1938 (5)	Net Value Product (million pesos) 1948 (6)	Net Value Product (million pesos) 1956 (7)
					(a	(a	(a
TOTAL FOR THE PHILIPPINES	110.8	183.9	90.3	166.0	4,674.2	5,177.3	8,596.4
AGRICULTURE, FORESTRY AND FISHING	100.5	19183	99.5	190.3	1,358.18	1,365.2	2,598.4
Crops	105.6	191.4	94.6	181.1	788.0	832.8	1,508.2
Palay	104.1	181.2	96.0	174.8	325.8	339.3	590.4
Corn	143.4	199.1	69.7	138.8	65.3	93.6	130.0
Copra	142.8	243.7	70.0	170.6	99.7	142.3	242.9
Coconuts not used for copra	113.1	129.1	88.4	114.2	20.4	23.1	26.4
Sugarcane	41.1	115.8	243.2	281.8	65.8	27.0	76.2
Abaca	67.8	86.3	147.5	127.3	47.8	32.4	41.3
Tobacco	57.6	375.0	173.7	646.1	11.2	6.5	42.0
Native	57.6	60.2	173.7	104.6	11.2	6.5	6.8
Virginia	---	b)	---	b)	---	---	35.2
Fruits & nuts not included above	118.5	187.6	84.4	158.3	73.9	87.6	138.6

TABLE I-1
(continued)

Industry	Indicator (1938 = 100.0) 1948 (1)	Indicator (1938 = 100.0) 1956 (2)	Indicator (1948 = 100.0) 1938 (3)	Indicator (1948 = 100.0) 1956 (4)	Net Value Product (million pesos) 1938 (5)	Net Value Product (million pesos) 1948 (6)	Net Value Product (million pesos) 1956 (7)
Banana	154.4	211.4	64.7	136.8	15.6	24.2	33.1
Jackfruit	136.2	230.8	73.4	169.4	8.5	11.6	19.6
Lanzon	152.4	189.8	65.6	124.6	5.1	7.8	9.7
Mango	106.8	145.2	93.6	135.8	17.6	18.8	25.5
Orange	149.3	167.3	66.9	112.0	3.0	4.6	5.1
Papaya	71.8	60.4	139.1	84.1	8.8	6.3	5.3
Pomelo	96.0	202.6	104.1	211.1	3.6	3.4	7.2
Pineapple	68.2	384.1	146.6	563.2	5.8	3.9	22.1
Fruits & nuts, n.e.c.	118.5	187.6	84.4	158.3	5.9	6.9	11.0
Root crops	100.9	222.3	99.0	220.1	52.9	53.4	117.6
Camote	95.4	201.1	104.8	210.9	34.8	33.2	70.0
Cassava	106.4	174.2	93.9	163.6	12.2	13.0	21.3
Gabi	125.9	439.3	79.4	348.7	2.3	2.9	10.1
Onion	98.1	361.9	101.9	368.8	1.2	1.2	4.5
Irish potato	362.2	4,702.0	27.6	1,298.0	0.1	0.4	4.6

TABLE I-1
(continued)

Industry	Indicator (1938 = 100.0) 1948 (1)	Indicator (1938 = 100.0) 1956 (2)	Indicator (1948 = 100.0) 1938 (3)	Indicator (1948 = 100.0) 1956 (4)	Net Value Product (million pesos) 1938 (5)	Net Value Product (million pesos) 1948 (6)	Net Value Product (million pesos) 1956 (7)
Root crops (cont'd)							
Ubi	126.8	364.1	78.8	287.1	1.4	1.8	5.1
Root crops, n.eoc.	100.9	222.3	99.0	220.1	0.9	0.9	2.0
Vegetables, not included above	79.7	495.1	125.4	621.0	15.2	12.1	75.2
Cabbage	91.1	659.7	109.7	724.0	1.0	1.0	6.9
Dry beans	34.6	451.9	289.3	1,307.0	2.5	0.9	11.2
Eggplant	122.2	543.1	81.8	444.2	2.5	3.1	13.8
Garlic	435.8	2,366.0	22.9	542.8	0.2	0.9	5.0
Mongo	67.6	403.7	147.8	596.9	4.1	2.8	16.7
Tomato	67.5	435.1	148.0	644.3	4.0	2.7	17.2
Vegetables, n.e.co	79.7	495.1	125.4	621.0	0.9	0.7	4.4
Coffee	200.0	391.0	50.0	195.4	2.6	5.2	10.1
Cacao	263.5	284.5	37.9	107.9	1.5	4.0	4.3
Peanuts, unshelled	102.5	276.4	97.5	269.6	2.6	2.6	7.0
Crops, n.e.c.	105.6	191.4	94.6	181.1	3.2	3.4	6.2

TABLE I-1
(continued)

Industry	Indicator (1938 = 100.0) 1948 (1)	Indicator (1938 = 100.0) 1956 (2)	Indicator (1948 = 100.0) 1938 (3)	Indicator (1948 = 100.0) 1956 (4)	Net Value Product (million pesos) 1938 (5)	Net Value Product (million pesos) 1948 (6)	Net Value Product (million pesos) 1956 (7)
Livestock raising & its products	82.6	193.6	121.0	234.4	296.6	245.0	574.5
Livestock raising	76.3	161.6	131.0	211.7	199.7	152.4	322.7
Carabaos	77.8	149.6	128.5	192.3	43.5	33.8	65.1
Cattle	44.0	77.4	227.4	176.1	60.2	26.5	46.6
Hogs	90.6	193.9	110.4	214.1	58.3	52.8	113.1
Chickens	106.8	265.5	93.6	248.5	32.4	34.6	86.1
Ducks	139.8	469.4	71.5	335.6	1.1	1.5	5.1
Livestock raising, n.e.c.	76.3	161.6	131.0	211.7	3.5	2.6	5.6
Products of livestock raising	95.6	259.8	104.6	271.9	96.9	92.6	251.8
Milk	61.7	114.8	162.0	186.0	14.1	8.7	16.2
Carabaos	77.7	149.2	128.7	192.0	7.4	5.8	11.1
Cattle	43.4	76.5	230.4	176.2	6.7	2.9	5.1
Eggs	101.3	284.5	98.7	280.8	82.8	83.9	235.6
Chickens	99.7	269.3	100.3	270.1	78.0	77.7	210.0
Ducks	129.3	534.6	77.3	413.4	4.8	6.2	25.6

TABLE I-1
(continued)

Industry	Indicator (1938 = 100.0) 1948 (1)	Indicator (1938 = 100.0) 1956 (2)	Indicator (1948 = 100.0) 1938 (3)	Indicator (1948 = 100.0) 1956 (4)	Net Value Product (million pesos) 1938 (5)	Net Value Product (million pesos) 1948 (6)	Net Value Product (million pesos) 1956 (7)
Livestock slaughtering	54.7	150.3	182.7	274.8	40.3	22.0	60.5
Carabaos	30.2	184.5	331.6	611.9	8.3	2.5	15.4
Cattle	36.5	76.2	274.3	209.0	14.7	5.4	11.2
Hogs	81.4	190.6	122.8	234.0	14.5	11.8	27.7
Chickens	99.7	269.3	100.3	270.1	1.8	1.8	4.8
Livestock slaughtering, n.e.c.	54.7	150.3	182.7	274.8	0.9	0.5	1.4
Forestry	84.7	242.1	118.0	285.7	62.0	52.5	150.0
Export timber	13.7	839.7	729.1	6,122.0	10.5	1.4	88.3
Domestic timber	100.0	114.0	100.0	114.0	49.1	49.1	56.0
Forestry, n.e.c.	84.7	242.1	118.0	285.7	2.4	2.0	5.7
Fishing	124.4	178.2	80.4	143.2	170.4	212.1	303.7
Commercial fishing	213.1	541.6	46.9	254.0	7.3	15.6	39.6
Fishponds	123.4	255.8	81.0	207.2	17.5	21.6	44.8
Municipally licensed & sustenance fishing	120.0	150.0	83.3	125.0	141.9	170.2	212.8
Fishing, n.e.c.	124.4	178.2	80.4	143.2	2.8	3.5	5.0

TABLE I-1
(continued)

Industry	Indicator (1938 = 100.0) 1948 (1)	Indicator (1938 = 100.0) 1956 (2)	Indicator (1948 = 100.0) 1938 (3)	Indicator (1948 = 100.0) 1956 (4)	Net Value Product (million pesos) 1938 (5)	Net Value Product (million pesos) 1948 (6)	Net Value Product (million pesos) 1956 (7)
MINING AND QUARRYING	29.5	118.0	339.1	400.3	118.2	34.8	139.5
Gold	23.2	45.0	431.2	194.1	80.9	18.8	36.4
Copper	45.4	613.6	220.0	1,350.0	6.3	2.9	38.6
Chromite	267.9	985.8	37.3	367.8	2.3	6.2	22.8
Iron	1.8	140.1	5,650.0	7,920.0	13.6	0.2	19.0
Coal	216.3	374.1	46.2	172.8	0.8	1.7	3.0
Limestone	71.8	267.0	139.1	371.6	1.9	1.4	5.1
Mining & quarrying, n.e.c.	29.5	118.0	339.1	400.3	10.2	3.0	12.0
MANUFACTURING	79.9	191.2	125.0	239.1	775.3	619.8	1,482.1
Food, manufactured	86.2	148.5	115.9	172.2	291.3	251.2	432.7
Milled rice products	104.1	181.2	96.0	174.0	103.7	108.0	188.0
Milled corn products	143.4	199.1	69.7	138.8	11.8	16.9	23.5
Bakery products	179.0	232.2	55.9	129.7	13.2	23.7	30.7
Centrifugal sugar mill & sugar refinery plant products	55.3	115.8	180.7	209.4	146.8	81.2	170.1

TABLE I-1
(continued)

Industry	Indicator (1938 = 100.0) 1948 (1)	Indicator (1938 = 100.0) 1956 (2)	Indicator (1948 = 100.0) 1938 (3)	Indicator (1948 = 100.0) 1956 (4)	Net Value Product (million pesos) 1938 (5)	Net Value Product (million pesos) 1948 (6)	Net Value Product (million pesos) 1956 (7)
Food, manufactured (cont'd)							
Muscovado & panocha	62.1	115.9	161.1	186.8	5.8	3.6	6.7
Desiccated coconut	179.2	137.6	55.8	76.8	10.0	17.8	13.7
Beverages	63.8	130.2	156.8	204.2	93.3	59.5	121.5
Distilled, rectified & blended liquors	20.4	28.6	489.6	140.2	76.9	15.7	22.0
Fermented beverages	532.9	979.5	18.8	183.8	5.2	27.9	51.2
Soft drinks & carbonated water	142.1	432.28	70.4	304.1	11.2	15.9	48.3
Tobacco products	40.5	209.1	246.8	516.2	89.6	36.3	187.4
Cigarettes	55.2	430.8	181.2	780.7	40.3	22.2	173.4
Cigars	28.5	28.4	350.7	99.6	49.3	14.1	14.0
Textiles & finished textile products	84.7	163.5	118.1	193.1	72.4	61.3	118.4
Cottondyarn	58.0	558.5	172.4	963.2	1.6	0.9	8.9
Cotton & rayon fabrics	39.7	326.6	251.8	822.9	6.8	2.7	22.2
Finished textile products of cotton & rayon fabrics	90.2	136.4	110.8	151.2	64.0	57.7	87.3

TABLE I-1
(continued)

Industry	Indicator (1938 = 100.0) 1948 (1)	Indicator (1938 = 100.0) 1956 (2)	Indicator (1948 = 100.0) 1938 (3)	Indicator (1948 = 100.0) 1956 (4)	Net Value Product (million pesos) 1938 (5)	Net Value Product (million pesos) 1948 (6)	Net Value Product (million pesos) 1956 (7)
Wood products, except furniture	122.6	152.7	81.5	124.5	32.2	39.5	49.2
Sawmill & planing mill products	121.7	122.5	82.1	100.6	32.2	39.2	39.4
Plywood & veneered panels	b)	b)	b)	3,333.0	---	0.3	9.8
Paper & paper products	270.0	1,375.0	37.0	509.2	1.1	2.8	14.5
Articles of pulp, paper & paperboard	270.0	1,375.0	37.0	509.2	1.1	2.8	14.5
Printed & published materials & allied products	89.5	166.0	111.7	185.5	20.9	18.7	34.7
Newspapers, magazines & periodicals	190.1	456.0	52.6	239.8	3.4	6.5	15.5
Printed & published materials & allied products, n.e.c.	69.7	108.9	143.5	156.4	17.5	12.2	19.1
Chemicals & chemical products	122.3	375.7	81.7	307.1	20.6	25.2	77.4
Vegetable oils	48.1	129.5	207.9	269.2	9.9	4.8	12.8
Products made largely of coconut oil	151.0	443.8	66.2	293.8	8.0	12.0	35.4
Medicinal & pharmaceutical preparations	276.0	1,500.0	36.2	543.4	1.3	3.6	19.8
Paints, varnishes & lacquers	332.6	657.8	30.1	197.7	1.4	4.8	9.4
Products of petroleum & coal	---	b)	---	b)	---	---	107.8

TABLE I-1
(continued)

Industry	Indicator (1938 = 100.0) 1948 (1)	Indicator (1938 = 100.0) 1956 (2)	Indicator (1948 = 100.0) 1938 (3)	Indicator (1948 = 100.0) 1956 (4)	Net Value Product (million pesos) 1938 (5)	Net Value Product (million pesos) 1948 (6)	Net Value Product (million pesos) 1956 (7)
Non-metallic mineral products, except products of petroleum & coal	71.1	334.0	140.5	469.5	9.7	6.9	32.4
Glass containers	66.9	685.7	149.5	1,025.0	1.5	1.0	10.6
Cement	71.9	267.0	139.1	371.6	8.2	5.9	21.8
Basic metal products & other metal products, except machinery & transportation equipment	b)	5,200.0	b)	b)	0.3	---	15.6
Miscellaneous primary metal industry products	---	b)	---	b)	---	---	6.3
Fabricated wire products	b)	1,648.0	b)	b)	0.3	---	4.4
Metal shipping barrels, drums, kegs & pails	---	b)	---	b)	---	---	4.9
Transportation equipment	107.0	315.3	93.4	293.9	12.4	13.3	39.1
Motor vehicles, except combat vehicles & motorcycles	---	b)	---	b)	---	---	13.8
Motor vehicles & cycles, repaired	107.0	203.6	93.4	190.1	12.4	13.3	25.3
Manufacturing, n.eoc.	79.9	191.2	125.0	239.1	128.4	102.7	245.5
CONSTRUCTION	125.4	116.5	79.7	92.9	360.1	451.7	419.8
Government construction	141.0	112.8	70.9	80.0	128.3	181.0	144.8

TABLE I-1
(continued)

Industry	Indicator (1938 = 100.0) 1948 (1)	Indicator (1938 = 100.0) 1956 (2)	Indicator (1948 = 100.0) 1938 (3)	Indicator (1948 = 100.0) 1956 (4)	Net Value Product (million pesos) 1938 (5)	Net Value Product (million pesos) 1948 (6)	Net Value Product (million pesos) 1956 (7)
CONSTRUCTION (cont'd)							
Non-commercial construction	118.3	128.9	84.5	108.9	85.3	101.0	110.0
Other private construction	115.8	112.6	86.3	97.2	146.5	169.7	165.0
TRANSPORTATION AND OTHER UTILITIES	158.7	246.0	63.0	155.0	187.0	296.8	460.1
Transportation	162.3	231.0	61.6	142.2	159.6	259.3	368.8
Railroad	86.6	117.9	115.5	136.2	13.4	11.6	15.8
Passenger	79.4	139.2	125.8	175.2	6.6	5.3	9.2
Freight	92.6	96.9	108.0	104.6	6.8	6.3	6.6
Road, motorized	355.0	607.5	28.2	171.1	32.0	113.6	194.4
TPU bus operators	337.8	50353	29.6	149.0	25.8	87.2	130.0
TH truck operators	365.0	805.9	27.4	220.8	3.1	11.5	25.3
AC vehicle operators	396.8	1,640.0	25.2	413.3	1.6	6.3	26.2
Operators of taxicabs & other automobiles for hire	585.2	877.8	17.1	150.0	1.5	8.6	12.9
Road, non-motorized	41.3	17.4	242.3	42.2	23.0	9.5	4.0

TABLE I-1
(continued)

Industry	Indicator (1938 = 100.0) 1948 (1)	Indicator (1938 = 100.0) 1956 (2)	Indicator (1948 = 100.0) 1938 (3)	Indicator (1948 = 100.0) 1956 (4)	Net Value Product (million pesos) 1938 (5)	Net Value Product (million pesos) 1948 (6)	Net Value Product (million pesos) 1956 (7)
Water	113.6	149.1	88.0	131.2	86.4	98.2	128.9
Internal shipping	104.3	135.1	95.8	129.5	56.6	59.0	76.4
Handling of internal cargo	104.3	135.1	95.8	129.5	16.7	17.4	22.5
Handling of overseas cargo	165.7	228.6	60.3	137.9	13.1	21.8	30.0
Air	6,888.0	5,549.0	1.5	80.6	0.3	18.9	15.2
Communications	67.2	207.7	148.7	308.9	11.7	7.9	24.3
Telephone	41.4	193.1	241.6	466.6	4.6	1.9	8.9
Telegraph, government operated	92.5	239.0	108.1	258.5	2.0	1.9	4.8
Posts	79.6	209.4	125.6	263.2	5.0	4.0	10.4
Electric energy production & distribution	207.1	540.6	48.3	260.9	9.6	19.9	52.0
Transportation & other utilities, n.e.c.	158.7	246.0	63.0	155.0	6.1	9.7	15.0
SERVICES	161.9	205.5	61.8	126.9	724.9	1,173.8	1,489.7
Government services	255.6	265.4	39.1	103.8	157.7	403.1	418.6
Armed forces	364.8	436.0	27.4	119.5	26.4	96.5	115.3
Other government services	233.4	230.9	42.8	98.9	131.3	306.6	303.3

TABLE I-1
(continued)

Industry	Indicator (1938 = 100.0) 1948 (1)	Indicator (1938 = 100.0) 1956 (2)	Indicatori (1948 = 100.0) 1938 (3)	Indicatori (1948 = 100.0) 1956 (4)	Net Value Product (million pesos) 1938 (5)	Net Value Product (million pesos) 1948 (6)	Net Value Product (million pesos) 1956 (7)
Community services	193.7	269.0	51.6	138.8	158.4	306.9	426.1
Education	238.3	291.3	42.0	122.2	95.5	227.6	278.2
Private education	357.7	674.1	28.0	188.4	11.9	42.7	80.4
Elementary	173.6	256.4	57.6	147.7	3.5	6.2	9.1
Secondary	482.4	841.5	20.7	174.4	3.1	15.0	26.1
Collegiate	381.3	780.7	26.2	204.7	4.9	18.8	38.5
Special vocational	1,082.0	3,238.0	9.2	299.1	0.1	1.5	4.5
Private education, n.e.c.	357.7	674.1	28.0	188.4	0.3	1.2	2.2
Public education	221.1	236.6	45.2	106.9	83.6	184.9	197.8
Primary	232.7	210.9	43.0	90.6	54.3	126.4	114.6
Intermediate	193.2	288.5	51.7	149.3	19.1	37.0	55.2
Secondary	255.2	297.5	39.2	116.5	7.5	19.1	22.2
Collegiate	89.8	215.8	111.3	240.3	2.7	2.4	5.8
Health services	125.0	237.3	80.0	189.7	57.1	71.4	135.5
Physicians	135.5	231.9	73.8	171.1	36.6	49.6	84.9

TABLE I-1
(continued)

Industry	Indicator (1938 = 100.0) 1948 (1)	Indicator (1938 = 100.0) 1956 (2)	Indicator (1948 = 100.0) 1938 (3)	Indicator (1948 = 100.0) 1956 (4)	Net Value Product (million pesos) 1938 (5)	Net Value Product (million pesos) 1948 (6)	Net Value Product (million pesos) 1956 (7)
Health Services (cont'd)							
Dentists	70.5	230.0	141.8	326.4	9.3	6.5	21.3
Nurses	137.4	256.3	72.8	186.5	8.9	12.2	22.7
Midwives	137.4	291.6	72.8	212.2	2.3	3.1	6.6
Religious services	128.0	206.2	78.1	161.1	5.0	6.4	10.3
Community services, n.e.c.	193.7	269.0	51.6	138.8	0.8	1.5	2.1
Business services	129.1	375.2	77.5	290.6	46.7	60.3	175.3
Lawyers	91.7	290.8	109.0	317.0	29.8	27.4	86.7
Accountants	178.2	751.2	56.1	421.5	3.9	7.0	29.3
Engineers	204.4	445.6	48.9	217.9	11.3	23.2	50.5
Architects	204.4	722.8	48.9	353.9	0.7	1.4	5.0
Business services, n.e.c.	129.1	375.2	77.5	290.6	1.0	1.3	3.8
Recreation	161.9	205.5	61.8	126.9	18.2	29.5	37.4
Personal services	102.9	116.9	97.2	113.6	309.8	318.8	362.2
Domestic services	113.8	120.4	87.8	105.7	157.8	179.8	190.1

TABLE I-1
(continued)

Industry	Indicator (1938 = 100.0) 1948 (1)	Indicator (1938 = 100.0) 1956 (2)	Indicator (1948 = 100.0) 1938 (3)	Indicator (1948 = 100.0) 1956 (4)	Net Value Product (million pesos) 1938 (5)	Net Value Product (million pesos) 1948 (6)	Net Value Product (million pesos) 1956 (7)
Personal services (cont'd)							
Restaurants, bars & refreshment parlors	59.6	77.6	167.7	130.2	72.8	43.4	56.5
Hotels, lodging places & dormitories	102.9	116.9	97.2	113.6	8.2	8.5	9.6
Barbering	116.5	139.8	85.8	119.9	23.6	27.5	33.0
Beauty care	117.3	137.5	85.2	117.2	12.9	15.2	17.8
Photographic services	129.2	177.9	77.3	137.6	4.9	6.3	8.7
Funeral services	95.5	80.0	104.6	83.7	9.9	9.4	7.9
Laundry services	161.6	226.1	61.9	139.9	14.5	23.4	32.7
Personal services, n.e.c.	102.9	116.9	97.2	113.6	2.0	2.0	2.3
COMMERCE	110.8	183.9	90.3	166.0	718.3	795.7	1,321.1
DWELLING SERVICES	98.7	150.4	101.3	152.4	326.4	322.2	491.1
Dwellings constructed of strong materials	84.4	299.3	118.4	354.4	51.0	43.0	152.5
Dwellings constructed of mixed materials	94.5	154.8	105.7	163.8	110.4	104.3	170.9
Dwellings constructed of light materials	93.5	102.5	106.9	109.7	160.4	149.9	164.4

TABLE I-1
(continued)

Industry	Indicator (1938 = 100.0) 1948 (1)	Indicator (1938 = 100.0) 1956 (2)	Indicator (1948 = 100.0) 1938 (3)	Indicator (1948 = 100.0) 1956 (4)	Net Value Product (million pesos) 1938 (5)	Net Value Product (million pesos) 1948 (6)	Net Value Product (million pesos) 1956 (7)
DWELLING SERVICES (cont'd)							
Dwellings constructed of other materials	535.8	71.0	18.7	13.2	4.6	25.0	3.3
PRODUCTION NOT INCLUDED ELSEWHERE	110.8	183.9	90.3	166.0	65.7	72.8	120.9

SOURCES: Calculated from data in Chapters II and III.

NOTES: a) Includes indirect taxes amounting to ₱ 73.7 million in 1956, ₱ 44.4 million in 1948 and ₱ 40.1 million in 1938 and not assigned to any industry.
b) Indicator nil for one of the years.

IV. ANALYSIS OF THE RESULTS

Reflected in the totals of Table I-1 is an expansion in aggregate real product between 1948 and 1956 at an average annual rate of a little more than 6.5%, with the 1956 level reaching about 90% above 1938. These results allow for a slight understatement in the growth of aggregate real product as estimated. In Chapter III it will be argued that, as far as indicator bias alone is concerned, the estimated growth for the postwar period and between prewar and 1956 is fairly accurate; but when understatement in the commerce weight, as described in Chapter II, is taken account of, the growth in aggregate real product for these periods does show a slight downward bias.

Population in the Philippines apparently grew at an average rate of 3.1% per annum between 1948 and 1956 to a level almost 55% above 1938.[13] Both of these figures rank quite high by any standard, especially since there was little net migration to the Philippines, but they may very well represent the true picture. If the prewar population total is considered reasonably accurate,[14] then any overstatement of the change between 1938 and 1956 would have to be accounted for by upward bias in the 1956 figure or, more precisely, in

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[13]The average annual growth rate implicit in the 1948 and preliminary 1960 Census totals is 3.18%, but the figure for the 1948-1956 period is assumed to be slightly less since population in more recent years probably has grown at a rate higher than the average. The 1938-1956 result was obtained by comparing a mid-1956 population of 24,512,000, derived from the 3.18% growth rate, with a mid-1938 population of 15,849,000, derived from the 1939-1948 intercensal growth rate, with the upward bias in the 1956 figure allowed for. (For the Census totals see Commonwealth of the Philippines, Commission of the Census, Census of the Philippines, 1939, Vol. II, Summary for the Philippines and General Report for the Censuses of Population and Agriculture, p. 111; Republic of the Philippines, Bureau of the Census and Statistics, Census of the Philippines, 1948, Vol. III, Summary and General Report for the 1948 Census of Population and Agriculture, Part I, Population, p. 67; and Republic of the Philippines, Bureau of the Census and Statistics, Journal of Philippine Statistics, XIII (July-December, 1960), Table 1.

It should be mentioned that only in this section is the 1956 population figure based on the 1960 Census total. No attempt has been made to correct the data in later chapters, and in Table I-1, based on an earlier estimate of the 1956 total which falls almost 2 million below the newer figure; however, the errors are not significant beyond the level of particular industries in most cases.

[14]There does not seem to be much question among students of Philippine demography of the reliability of the 1939 Census total and the extrapolation to mid-1938 can not be a source of significant error because of the short length of time involved.

the preliminary 1960 Census total from which it is derived.[15] It is quite doubtful that the 1948 population total is understated,[16] and so any cause of upward bias in the postwar growth rate also would have to lie with the 1960 Census figure. Indeed, if the 1948 population total is overstated, then the 1960 figure would have to contain a more-than-equivalent overstatement for the postwar growth rate to be biased upward. But there is no a priori reason for expecting the 1960 Census to be less accurate than the 1948 Census, or even the prewar Census, especially when one considers the experience and planning that went into the recent effort and the relatively favorable conditions under which the data were gathered. In addition, the high growth rate of 1.9% which occurred between prewar and 1948 - a period covering World War II and the years of postwar civil conflict - suggests that the growth rate implicit in the 1960 figure is not unreasonable.[17] Of course a definitive evaluation of the 1960 total will not be possible until the more detailed Census figures on age, sex, etc. become available.

Despite the rapid rise in population which occurred, aggregate real product on a per capita basis still showed a growth rate of a little above 3.5% between 1948 and 1956 with the 1956 level slightly more than 20% higher than prewar.[18]

This approximately 3.5% rate of expansion in aggregate real product per capita represents a considerable acceleration over the pace of growth of the Philippine economy during earlier periods. When the 3.5% per annum rate is projected backwards in time a level of aggregate real product per capita is soon reached which makes it difficult to imagine how the then existing population could have survived. This is especially so when such factors as less adequate medical care, poorer sanitation, etc. are taken into account.[19]

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[15]As pointed out previously, error in the extrapolation itself has been allowed for.

[16]Amos H. Hawley, "The Philippine Census of 1948," Papers in Demography and Public Administration, pp. 11-26 and Francis C. Madigan, "Hindsight and Foresight: The Census of the Philippines, 1948 and 1960," Philippine Studies, VI (March, 1958) 87-104. Again, any error from extrapolating the Census result would be insignificant.

[17]Of course, the 1.9% result could be due partly to upward bias in the 1948 figure, but the bias can not be serious presumably. Any overstatement in the 1948 total would have to be relatively smaller than the upward bias, if any, in the 1960 total. Otherwise the high 3.1% postwar growth rate would be even higher.

[18]The population figures used in the calculations are 15,849,000, 19,085,000, and 24,512,000 for mid-1938, mid-1948 and mid-1956 respectively. The derivation of the 1938 and 1956 figures has been discussed previously and the upward bias in the 1956 population figure is allowed for in the per capita results. For 1948, the Census total was adjusted to a mid-year basis by the 3.18% average annual rate.

[19]This line of reasoning follows that used by Simon S. Kuznets in "Quantitative Aspects of the Economic Growth of Nations: I. Levels and

In this connection it is useful to estimate the expansion in aggregate real product required for a growth rate of 3.5% in per capita real product in the light of the population trends of the Philippines duringdthe last hundred years. Between 1948 and 1956 population grew at an average rate of 3.1% per annum. The results of the Censuses of 1903, 1918, and 1939 indicate about a 2.2% rate of growth between 1918 and 1939 and about a 1.9% rate between 1903 and 1918.[20] The population data for the late Spanish period give quite erratic growth results, partly because of natural calamities and partly because of the quality of the data. Indeed all Philippine population figures before 1939 are less complete than the data from that date on, particularly as regards the non-Christian population. But, it seems reasonable to infer from the figures that population grew less rapidly during the late Spanish period than during the American period, at a rate of perhaps 1.5% per annum on the average.[21] Given these population trends, even during the latter part of the nineteenth century a 3.5% rate of growth in aggregate real product per capita could not have occurred without an average increase in aggregate real product of 5.1% per annum.[22] This is only about 22% below the average increase between 1948 and 1956, and such a large growth in aggregate real product is highly unlikely in view of the structure and organization of the Philippine economy up to World War II as compared to the postwar period.

The rapid growth in aggregate real product per capita shown for the postwar period is to some extent misleading because of the adverse effects of World War II on Philippine production levels. Aggregate real product in 1948 was perhaps only about 15% higher than in 1938[23] and on a per capita basis probably showed a slight decline. The real product in agriculture was only slightly above prewar in 1948, and mining was 70% below, manufacturing almost 20% below, and dwelling services about the same as prewar. But even allowing for the effects of the war the postwar growth is indicative of a basic change in the pace of Philippine economic activity, as the advance to the 1956 level of aggregate real product per capita of slightly more than 20% above prewar demonstrates.

Variability of Rates of Growth," Economic Development and Cultural Change, V (October, 1956) 22-23.

[20] Census...1939...Population and Agriculture, p. 53.

[21] A summary of data on the population of the Philippines for the period before 1903 appears in Census...1939...Population and Agriculture, p. 53.

[22] The 5.1% is obtained from the formula $r_3 = r_1(1+r_2)+r_2$, where r_1 is the per annum rate of increase in aggregate real product per capita, r_2 is the per annum rate of increase in population, and r_3 is the per annum rate of increase in aggregate real product.

[23] The change of 11% in aggregate real product for the 1938-1948 period shown in Table I-1 contains somewhat of a downward bias. Understatement in the growth arising out of indicator bias is only partially offset by the deficiency in the commerce weight.

In Table I-2 the industrial pattern of expansion is summarized. The share in aggregate real product of agriculture, manufacturing and services combined increased from a little less than 61.6% in 1938 to approximately 65.4% in 1956, with each accounting for about the same portion of the combined total in both years. Opposed to this rise was a decline in the shares of construction, commerce and dwelling services. The percentage accounted for by mining and quarrying also decreased, but this was due almost entirely to a large decline in the real product of gold mining. The share of transportation and other utilities increased.

TABLE I-2

PERCENTAGE SHARES OF AGGREGATE REAL PRODUCT IN THE PHILIPPINES BY INDUSTRY 1938 AND 1956

Industry	1938 (per cent) (1)	1956 (per cent) (2)
AGGREGATE REAL PRODUCT	100.0	100.0
Agriculture, forestry and fishing	29.3	30.5
Mining and quarrying	2.6	1.6
Manufacturing	16.7	17.4
Construction	7.8	4.9
Transportation and other utilities	4.0	5.4
Services	15.6	17.5
Commerce	15.5(a	15.5(a
Dwelling services	7.0	5.8
Production not included elsewhere	1.4	1.4

SOURCES: Calculated from Table I-1 with 100.0% actually equalling aggregate real product less unallocated indirect taxes.

NOTES: (a The percentage share of commerce is assumed constant because the lack of data permits no other alternative. There is reason to believe that actually a decline occurred.

In more detail, this is what the estimates show about the growth in real product during the postwar period and between 1938 and 1956. Agriculture reached a level of real product of about 90% above prewar after expanding by 80%, or a little more, between 1948 and 1956 and manufacturing achieved somewhat more than a 90% rise over prewar as the result of a postwar increase of over 140%. In services, the 1956 real product was more than 105% above prewar; here a relatively small expansion of about 30% during 1948-1956 was added to a large rise of almost 60% between 1938 and 1948. Transportation and other utilities showed a rise of 55% during 1948-1956 and a similar increase between 1938 and 1948, making the 1956 level about 140% higher than prewar. The real product of construction, commerce, dwelling services, and mining also expended between 1938 and 1956, but by somewhat less than the real product of the other industries. The 1956 figure for construction was not much more than 15% above prewar; after a rise of almost 25% between 1938 and 1948 real product probably declined by a small amount between 1948 and 1956, construction being the only industry which did not show considerable growth during the postwar period. Commerce probably grew by no more than 80% between prewar and 1956, with the expansion during the 1948-1956 period amounting to about 60%. In dwelling services, an increase of slightly more than 50% in the 1948-1956 period resulted in a 1956 figure which was about 50% above prewar. In mining, because of the sharp decline in the 1938-1948 period a postwar rise of 300% was only sufficient to bring the 1956 level to 18% above 1938.

Agriculture (including forestry and fishing) accounted for approximately one-third of the increase in aggregate real product between 1948 and 1956 and between 1938 and 1956, with the share slightly larger in the postwar period; in both periods the expansion in agriculture real product, amounting to 80%, or a little more, and approximately 90%, exceeded the increases in aggregate real product. Crops contributed about one-half of the growth in agriculture real product in the postwar years and about three-fifths between 1938 and 1956; in relative terms the crop total rose by somewhat less than 80% in the 1948-1956 period and by just about 90% in the 1938-1956 period. Palay (rice) alone was responsible for over one-third of the crop expansion in both periods; however, palay real product did increase by a bit less than the crop total relatively. Individual crops showing greater expansion than crops as a whole, and agriculture as a whole, during the postwar years include copra, sugarcane, Virginia tobacco, most root crops, vegetables, some fruits and nuts, and a few miscellaneous crops. Corn expanded only moderately during the postwar period, but substantially between 1938 and 1956 along with all of these crops except sugarcane. In 1956 the real product of sugarcane was only slightly above prewar; coconuts not used for copra and a few other crops failed to show large increases either between 1948 and 1956 or 1938 and 1956; and abaca and native tobacco showed little growth during the postwar period and decline overall. These four are all export crops; indeed before World War II they accounted for about two-thirds of the agriculture real product disposed of abroad. Of the major export crops only copra and pineapple showed significant advances over prewar.

The livestock industries contributed about one-third of the agricultural growth in 1948-1956 and about one-quarter in 1938-1956, as the result of increases of perhaps 140% during the postwar period and almost 90% between

prewar and 1956. Practically all sectors of the livestock industry showed considerable growth during the postwar period with only cattle lagging behind the pace of agriculture as a whole. Between 1938 and 1956 the poultry sector showed substantial growth; hogs expanded in approximately the same degree as agriculture as a whole, as did carabao (water buffalo) slaughtering; and carabao raising and its products and the cattle industry lagged considerably behind.

Forestry and fishing togetherdexpanded by 70% or so in 1948-1956 and 95% in 1938-1956. During both periods the expansion was sparked by export timber, commercial fishing, and fishpond operations; domestic timber and municipally licensed and sustenance fishing were relatively sluggish.

Manufacturing accounted for about one-quarter of the growth in aggregate real product during the postwar period and about one-fifth between 1938 and 1956; in both periods the increases in manufacturing real product, amounting to over 140% and somewhat more than 90%, exceeded the expansion in aggregate real product. Four industries - cigarettes, petroleum products, milled rice products, and centrifugal sugar mill and sugar refinery plant products - contributed almost half of the growth in manufacturing real product in both periods, but in terms of relative growth they differed considerably. Cigarettes and petroleum products were the most dynamic, with cigarettes expanding by substantially more than manufacturing as a whole both between 1948 and 1956 and between 1938 and 1956, and petroleum products growing from nothing in 1938 and 1948 to fourth place in manufacturing real product in 1956. Sugar real product increased considerably in the postwar period, though by not quite as much as manufacturing real product, but in 1956 was only slightly above prewar. The growth in milled rice products was moderate in both periods. There were several industries aside from cigarettes and petroleum products whose real product expanded by more than the manufacturing total during both periods. These include soft drinks; textile yarn and fabrics; plywood and veneered panels; articles of pulp, paper and paperboard; newspapers, magazines and periodicals; coconut oil products; medical and pharmaceutical preparations; glass containers; cement; various metal products; and motor vehicles. A few industries showed relatively little growth during 1948-1956 but were well above prewar in 1956 because of considerable growth between the end of the war and 1948. Milled corn products; bakery products; fermented beverages; paints, varnishes and lacquers; and motor vehicle repair fall in this category. Muscovado and panocha; desiccated coconut; finished textile products; sawmill and planing mill products; printed and published materials and allied products aside from newspapers, magazines and periodicals; and vegetable oils all grew only slightly between 1938 and 1956; of these industries only vegetable oils expanded by more than manufacturing as a whole during the postwar period. Non-fermented alcoholic beverages and cigars declined considerably between 1938 and 1956 although the former did show some growth between 1948 and 1956.

As with agriculture, important export industries prewar - sugar, vegetable oils, desiccated coconut, and cigars - showed relatively little growth or actual decline between 1938 and 19568 Indeed, in no case did the real product of a major export industry increase by more than the real product of manufacturing as a whole. Various industries producing for domestic investment showed substantial growth, but in 1956 the only important production of finished capital goods was motor vehicle assembly; most of the other output consisted

of construction materials. In both agriculture and manufacturing the major dynamic element was production for domestic consumption.

Services contributed only about one-tenth of the growth in aggregate real product between 1948 and 1956 but about one-fifth of the growth between 1938 and 1956, this because of the considerable expansion of services between the end of the war and 1948. In 1956 the real product of services was more than 105% above prewar with the increase between 1948 and 1956 amounting to about 30%. Government services, including both the armed forces and other government services; private and public education; health services; and business services all expanded by more than services as a whole between 1938 and 1956, with relatively rapid growth between 1948 and 1956 occurring in private education, health services, and businessdservices. Personal services were generally sluggish in both periodsd

Transportation and other utilities showed a time pattern of growth similar to services, expanding by less than aggregate real product between 1948 and 1956 but by more between 1938 and 1956. The increasesdin the real product of this industry amounted to 55% and about 140%. Expanding by more than the industry as a whole in 1938-1956 were motorized road and air transportation and electric energy production and distribution; the real product in the handling of overseas cargo and in communications grew to a lesser degree but still by more than aggregate real product. Those which showed relatively rapid growth in 1948-1956 include some sectors of motorized road transportation, communications, and electric energy. In both periods rail, non-motorized road, and internal water transportation were sluggish.

In commerce, dwelling services, and mining and quarrying there were some sectors which showed increases greater than that of aggregate real product, but these changes were not sufficient to offset sluggish growth in other parts of the industries; in construction all sectors of the industry showed relatively little growth. Table I-1 shows no breakdown for commerce, but in Chapter III it will be argued that while commercial activity in domestic commodities was dynamic in 1948-1956 and 1938-1956 the import sector lagged in both periods, though less so in 1938-1956. The services of dwellings constructed of strong materials increased considerably in both periods; the services of dwellings constructed of mixed materials increased only moderately and the services of dwellings contructed of light materials hardly at all, however. The real product of copper, chromite and coal mining and limestone quarrying expanded considerably in both the 1948-1956 and 1938-1956 periods; gold and iron mining also grew substantially in the postwar period, but the latter reached a 1956 level only moderately above prewar and the former a level that was still considerably below prewar because of large declines between 1938 and 1948. While the various sectors of construction showed some increases in real product between 1938 and 1948, they showed little growth or actual decline between 1948 and 1956 so that in the latter year they were not very much above prewar.

In Table I-3 the final disposition of Philippine real product to private consumption, government consumption, domestic investment, and

TABLE I-3

PHILIPPINE REAL PRODUCT BY FINAL DISPOSITION, 1938, 1948 AND 1956, IN 1956 PRICES

	Indicator (1938 = 100.0)		Indicator (1948 = 100.0)		Net Value Product (million pesos)		
	1948 (1)	1956 (2)	1938 (3)	1956 (4)	1938 (5)	1948 (6)	1956 (7)
TOTAL FOR THE PHILIPPINES	110.8	183.9	90.3	166.0	4,674.2	5,177.3	8,596.4
Private consumption	110.3	200.2	90.7	181.5	2,965.7	3,271.2	5,938.3
Government consumption	243.7	255.5	41.0	104.8	253.2	617.9	646.8
Domestic investment	119.4	137.6	83.7	115.2	654.8	781.9	900.8
Exports	63.4	138.7	157.8	219.0	800.4	507.1	1,110.5

SOURCES: Calculated from Table I-1 as per Appendix I-1.

exports is summarized.[25] The estimates were derived by reclassifying the data on real product by industrial origin and must be considered quite rough because of the limited detail of the industry figures. For more information about the reclassification see Appendix I-1.

By far the greatest growth between 1938 and 1956 took place in the industries producing for private and government consumption. In the latter case most of the growth occurred between 1938 and 1948 while in the case of private consumption it was concentrated in the 1948-1956 period. Production for export also expanded considerably during 1948-1956 but this was due predominantly to the low level at the start; in 1956 output was not much above prewar. Production for domestic investment, which was contributed largely by construction and related industries, showed relatively little increase during both periods.

V. CONCLUSION

An analysis of the new estimates thus leads to the following conclusions about the pace and pattern of Philippine economic growth.

(1) Aggregate real product grew at an average annual rate of a little more than 6.5% between 1948 and 1956 reaching a level of about 90% above 1938. The corresponding per capita figures come to a little above 3.5% and slightly more than 20%.

(2) The postwar rate of expansion represents a considerable acceleration over the pace of economic growth during earlier periods.

(3) Between 1938 and 1956 the portion of aggregate real product accounted for by agriculture, manufacturing and services increased and the portion accounted for by construction, commerce and dwelling services decreased; however, the shares of agriculture, manufacturing and services relative to each other remained about the same.

(4) Within all of the industry divisions there were significant differences among individual industries as regards the time pattern and magnitude of growth.

(5) The expansion between 1938 and 1956 was diffused among a number of industries producing for the domestic market, with the real product going to private and government consumption showing greater growth than that for investment. Export real product grew relatively little.

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[25] The concept of aggregate real product by final disposition differs from the more well-known concept of aggregate real expenditure by type. For the distinction see Appendix I-1.

The organization of scattered data for both prewar and postwar into real product estimates provides new information on the Philippine economy. In this study the information has been used to examine the pace and pattern of economic growth through 1956. It can also provide a starting point for measuring and analyzing the performance of the economy in more recent years. The information is useful too for studying particular industries and their relation to each other and to the economy as a whole in a specific year or over a period of years in a systematic manner.

In the next two chapters the derivation of the data in Table I-1 is explained and the estimates are evaluated. A final chapter is devoted to a comparison of the estimates with the official data on Philippine real product.

APPENDIX I-1

REAL PRODUCT BY FINAL

DISPOSITION

In reorganizing the data on real product by industrial origin into the estimates of real product by final disposition, industriesdaccounting for 74.9% of the aggregate net value product in 1956 were assigned directly to one of the four final-disposition categories. Included in exports were copra; coconuts not used for copra; sugarcane, abaca; native tobacco; pineapple; export timber; forestry, n.e.c.; fishing, n.e.c.; gold; copper; chromite; iron; centrifugal sugar mill and sugar refinery plant products; desiccated coconut; and, in 1938 only, cigars and vegetable oils. Assigned to domestic investment were carabao raising; domestic timber; coal; limestone; mining and quarrying, n.e.c.; wood products, except furniture; paints, varnishes, and lacquers; basic metal products and other metal products, except machinery and transportation equipment; motor vehicles; and construction. Included in government consumption were government services and public education. The industries assigned directly to private consumption comprise all those not listed above or below.

The rest of aggregate net value product was allocated roughly. Manufacturing, not included elsewhere, was allocated among private consumption, domestic investment, and exports in each of the three years in the same proportions that the rest of manufacturing was. Indirect taxes not broken down in the industry estimates were distributed among the three categories in the same proportions as the real product of the industries which the taxes covered; and the capital consumption allowances for services, which also are not broken down, were distributed between private and government consumption in a similar manner. Railroad freight and TH truck transportation; the handling of internal and overseas water cargo; communications; transportation and other utilities, n.e.c.; business services; commerce; and production not included elsewhere were allocated to private consumption, domestic investment, and exports in the same proportions that the rest of aggregate real product was.

It should be pointed out that aggregate real product by final disposition, as presented in Table I-3, is not the same as the more well-known concept of aggregate real expenditure by type. The former concept considers the domestic real product going for private consumption, etc. while the latter considers private consumption, etc. irrespective of the source of real product and then excludes the total value of imports in real terms from the total value of exports in real terms. To move from the former to the latter it would be necessary to obtain the import amounts going to private consumption, etc. in each of the three years; add these amounts to the real product going to private consumption, etc.; and subtract the total of these amounts from the export total.[26] If the adjustments were made, the following results as compared to those appearing in Table I-3 might be expected. For the 1938-1956 period, private and government consumption would show less and domestic investment greater expansion, while net exports (the export total minus the import total) would decline. For the 1938-1948 period all of the domestic components would show greater expansion and net exports would decline. And for the 1948-1956 period, private and government consumption would show reduced and domestic investment greater growth, with net exports rising.

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[26] Of coursedaggregate real expenditure by type could be estimated directly also.

CHAPTER II

WEIGHTS

I. WEIGHT SPECIFICATIONS

It will be recalled from Section II of the last chapter that the real product originating in two or more industries, or in the economy as a whole, during any one year is determined (1) by the net value product of each industry in the base year and (2) by the level of real product originating in each during the given year as compared to the base yearo Or, putting it another way, the weight given to the comparative real product of one industry relative to the comparative real product of other industries is the net value product originating in that industry in the base year relative to the net value product originating in the other industries during the year. For example, assume that the Year 1 real product of agriculture, expressed in Year 0 prices, is 105% of the amount in Year 0 while that of other industries is 125% of its Year 0 level. The Year 1 value, in Year 0 prices, of both combined is then obtained by multiplying 105% by the net value product of agriculture in Year 0 and 125% by the net value product of other industries in Year 0 andosumming the results. The effect of the comparative real product of each on the total of both is thus determined by the weight of each in Year 0.

This chapter is concerned with establishing the weights in Year 0, that is, with the estimates of net value product by industry for 1956.

In preparing the figures considerable use is made of the official industry estimates, but the results differ from the published data in several respects.o First, there is a conceptual difference. The official estimates exclude income accruing to the rest of the world, allowances for capital consumed and indirect taxes; the data prepared in this study do not. Where income accruing to the rest of the world and capital consumption allowances are not explicitly mentioned they are implicit in the net value product as estimated. Indirect taxes are in every case explicitly added. The procedure for taxes is discussed in Appendix II-1. Secondly, in several instances deficient official figures have been revised or replaced with entirely new estimates.[1] Finally, some differences in classification also exist.[2] This is especially true as regards services.

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[1]The figures used or modified in this study are those appearing in "The National Accounts of the Philippines and Supporting Tables," Statistical

II. AGRICULTURE, FORESTRY AND FISHING

The data on net value product in agriculture (crops, livestock raising and its products, and livestock slaughtering[3]), forestry and fishing are summarized in Table II-1d The figures there differ quite significantly from the official estimates.

In general, the official procedure for crops involves taking a simple average of the value of production for the 1955-56 and 1956-57 crop years by individual crops, using data from the annual Crop and Livestock Surveys in the Philippines, and subtracting commodity costs obtained from various sources.[4] In this study different estimates are used for copra, coconuts not used for copra, and sugarcane. In addition, since the Survey covers only farms, some measure of non-farm production is necessary. Officially, only a lump sum figure for non-farms is presented; here it is allocated among the various crops.

The results of the Crop and Livestock Surveys show copra production of 1.140 million tons woth ₱ 224.3 million for the 1955-56 crop year and 1.319 million tons worth ₱ 261.6 million for the 1956-57 crop year,[5] whereas the

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Reporter, II (April, 1958) 17-27. A later version appears in "The National Accounts of the Philippines and Supporting Tables," Statistical Reporter, III (April, 1959) 8-22, and with slight revisions in "The National Accounts of the Philippines and Supporting Tables," Statistical Reporter, IV (April, 1960) 13-27. The later estimates were not considered because detailed information about their preparation could not be obtained in time. An examination of the general procedures used and of the figures themselves indicates that most of what follows in this chapter is still pertinent, however.

[2]Insofar as possible the net value product data in this study are classified according to the scheme recommended in United Nations, Statistical Office, International Standard Industrial Classification of All Economic Activities. An additional category is established for dwelling services.

[3]In some countries slaughtering is included in manufacturing. In the Philippines, however, most of it occurs at the farm or home-site, frequently for direct consumption.

[4]Trinidad, ...National Income Accounting..., pp. 66-70. The crop year runs from July 1 to June 30. In his discussion of methods, Trinidad states that Manila prices and the prices received by farmers for eight crops (obtained in a Survey separate from the Crop and Livestock Survey) are used to value crop production. However, when it comes to the actual figures the values from the Crop and Livestock Surveys are used in most cases.

[5]Letter to the writer from Dimas A. Maulit, Chief, Agricultural Economics Division, Department of Agriculture and Natural Resources, Republic of the Philippines (April 13, 1960).

figures used for the official net value product estimate show values of ₱ 234.4 million and ₱ 307.2 million for the two crop years.[6] So in this case the Survey data were not actually used officiallysand it is doubtful that the alternative is betters The price of copra (at least at the wholesale level in Manila) remained about the same in 1956-57 as compared to 1955-56,[7] and there is no reason to expect the volume of copra output to have increased by 30% in thatsone year. Therefore, the official figures for the two crop years are replaced by the Survey information. For a similar reason the value of coconuts not used for copra is revised.s[8] The Survey does not collect data on the value of all nuts but only of those used for food. The unit value of food nuts (₱ 0.05442 per nut) is therefore applied to all nuts not used for copra to obtain the total value,s[9] which is a bit too low since better quality nuts comprising most of the total are used for desiccated coconut.

TABLE II-1

SUMMARY OF THE NET VALUE PRODUCT IN PHILIPPINE AGRICULTURE, 1956
(million pesos)

AGRICULTURE	2,598.4[a]
Cropss	1,508.2
Livestock raising & its products	574.5[b]
Livestock slaughtering	60.5
Forestry	150.0
Fishing	303.7[c]

SOURCES: Tables II-3 through II-7s estimates of the writer, and Appendix II-1.

NOTES: a) Includes ₱ 1.5 million of unallocated indirect taxes.
b) Includess ₱ 1.1 million of indirect taxes assigned to livestock raising but notsbroksnsdown furthers
c) Includes ₱s1.5 million of unallocated indirect taxess

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[6]Trinidad, ...National Income Accounting..., p. 70.

[7]Central Bank of the Philippines, Statistical Bulletin, VIII (December, 1956), Table 120 and IX (December, 1957), Table 103.

[8]Officially, the value of coconuts not used for copra declined by about 20% between 1955-56 and 1956-57 (calculated from Trinidad, ...National Income Accounting..., p. 70)s Most of the nuts are used for desiccated coconut which is largely exported, and exports of this commodity increased by about 15% between 1955-56 and 1956-57 (calculated from Central Bank, Statistical

The official value for sugarcane production is not used because it (₱ 178.7 million)[10] is quite a bit greater than the cost of raw materials used by centrifugal sugar mills and sugar refiners (₱ 109.4 million).[11] It appears that the deficiency lies with the price used to value cane output. Using the official cane-centrifugal sugar conversion ratio of 7.9 tons of cane per ton of sugar, and allowing for the centrifugal sugar used in refining, the unit cost of cane used by sugar mills comes to ₱ 9.20 per ton[12] as compared to the official price of ₱ 16.85 per ton.[13] So the estimated cost of raw materials used by centrifugal sugar mills[14] is taken as the value of the cane output going for centrifugal sugar. The value of the cane output going for muscovado and panocha (₱56.85 million) is obtained by applying the unit cost of cane (₱ 9.20 per ton), as estimated in Table II-2, to the estimated volume of output (745.4 thousand tons)d The latter is obtained by multiplying the production of muscovado and panocha (62.12 thousand tons)d[15] by 12.0.[16]

The procedure employed in this study for allocating the official total for non-farm production (₱ 150.03 million)[17] by crop is a rough one. Since a

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Bulletin, VIII (December, 1956), Table 76 and IX (December, 1957), Table 60).

[9]Data are from a letter to the writer from Dimas A. Maulit (February 11, 1960).

[10]Trinidad, ...National Income Accounting..., p. 70.

[11]Republic of the Philippines, National Economic Council-Bureau of the Census and Statistics, 1956 Annual Survey of Manufactures, Vol. 1, Series 2, p. 102. The ₱ 178.7 million does include the value of cane used for muscovado and panocha (crudely-produced brown sugar) but this amounts to only a few million pesos.

[12]Table II-2.

[13]Republic of the Philippines, Office of Statistical Coordination and Standards, National Income Branch, National income worksheets for 1956 (unpublished), as copied by Nicolaas G. M. Luykx, III.

[14]Table II-2.

[15]Maulit, letter (February 11, 1960).

[16]This is the cane factor used in the official estimates. A different figure (90.72 thousand tons) is used for muscovado and panocha output there, however; it is apparently an approximate one since it appears on the worksheets as 100.00 thousand short tons.

[17]Calculated from Trinidad, ...National Income Accounting..., p. 70. The ₱ 150.03 million is an average of the 1955-56 and 1956-57 figures for a category of crops labeled "others" in Trinidad, less the value of farm crops not included elsewhere, ₱ 3.72 million (Maulit, letter (February 11, 1960)). The information that "others" refers to minor farm crops and non-farm output comes from letters to the writer from Trinidad (April 7 and June 29, 1960).

TABLE II-2

DERIVATION OF THE APPROXIMATE UNIT COST OF SUGARCANE USED BY CENTRIFUGAL SUGAR MILLS IN THE PHILIPPINES, 1956

(1)	Quantity of centrifugal sugar sold (thousand tons)	1,139.1
(2)	Quantity of cane required for the centrifugal sugar sold (thousand tons)	8,998.9
(3)	Cost of raw materials used by centrifugal sugar mills and refineries (million pesos)	109.44
(4)	Quantity of refined sugars sold (thousand tons)	113.21
(5)	Quantity of centrifugal sugar required for the refined sugar sold (thousand tons)	121.13
(6)	Unit value of centrifugal sugar sold (pesos per ton)	220.14
(7)	Cost of the centrifugal sugar required for the refined sugar sold (million pesos)	26.67
(8)	Approximate cost of raw materials used by centrifugal sugar mills alone (million pesos)	82.77
(9)	Approximate unit cost of cane used by centrifugal sugar mills (pesos per ton)	9.198

Sources: (1): 1956 Annual Survey of Manufactures, Vol. 1, Series 2, p. 167.
(2): (1) x 7.9.
(3): 1956 Annual Survey of Manufactures, Vol. 1, Series 2, p. 102.
(4): Ibid., p. 167.
(5): (4) x 1.07.
(6): Calculated from 1956 Annual Survey of Manufactures, Vol. 1, Series 2, p. 167.
(7): (6) x (5).
(8): (3) - (7).
(9): (8) ÷ (2)s

farm, by definition, can have an area of as little as 1,000 square meters[18] it is assumed that most of the non-farm production consists of tree crops, vegetables, and root crops, and the following ratios of non-farm to farm output are used: fruits and nuts, 0.50; root crops and vegetables, 0.40; coconuts not used for copra, 0.30; peanuts, 0.25; corn and abaca, 0.15; sugarcane, 0.05; copra, 0.02; palay and native tobacco, 0.01; and crops not elsewhere classified, 0.11, derived from the residual of the ₱2150.03 million. Within each group the ratios are assumed to be the same for all crops. The two crops account for the largest part of farm net value product, palay and copra, are much less important to non-farm production; this reduces, but of course does not eliminate, the chance of error in the net value product among crops arising from the rough figures on non-farm production.

Table II-3 shows the value of farm and non-farm output and the commodity costs which are deducted in arriving at net value product. It can be seen that the commodity costs are quite low except for sugarcane which involves more mechanization and scientific farming than the other crops.

The method by which crop-year data are converted to the net value product for calendar 1956 in this study and in the official estimates has been subject to some criticism. It has been argued that the use of a simple average of the data for the two successive crop years overlapping a given calendar year can lead to a significant error when volume or price is changing rapidly.[19] This error will arise, however, only if the net value product for the calendar year, say 1956, is defined as the value of the crop harvested during 1956 less the commodity costs required for its production. A more accurate definition of net value product, focusing on work in process as well as work completed, would include the value added in 1956 to crops harvested in succeeding years and exclude the value added to the 1956 harvest in preceding years. In that case, the accuracy of a simple average of the net value product for the 1955-56 and 1956-57 crop-years, as estimated, as a measure of the actual net value product during calendar 1956, requires only that (1) the portion of the value added during 1956 to the crop harvested after 1956 but before the end of the 1956-57 crop year be the same as (2) the portion of the value added during 1955 to the crop harvested in 1956 before the end of the 1955-56 crop year. Indeed, an average of the net value product for successive crop years as estimated is a more accurate measure than the corresponding figure for the calendar year itself.

The accuracy of the crop weights rests basically upon the accuracy of the Crop and Livestock Survey data. The data were obtained by means of sample interviews and the probability of errors has been admitted.[20] It is impossible

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[18] Republic of the Philippines, Department of Agriculture and Natural Resources, Agricultural Economics Division, Crop and Livestock Statistics, 1954 and 1955, p. 2.

[19] See, for example, Trinidad, ...National Income Accounting..., p. 139.

[20] Jose V. Castillo, "Improvement of Frame for Future Crop and Livestock Survey," Statistical Reporter, II (January, 1958) 1-5; K. C. Sreedharan Pillai, "Sample Surveys in the Philippines," Statistical Reporter, II (July, 1958) 10-12; and Burton Onate, "Non-sampling Errors in Philippine Field Surveys," Philippine Statistician, VI (June, 1957) 82-86, 89 and 92-93.

TABLE II-3

DERIVATION OF THE NET VALUE PRODUCT OF AGRICULTURAL CROPS IN THE PHILIPPINES, 1956
(million pesos)

	Gross Value of Farm Output (a	Gross Value of Non-Farm Output	Total Gross Value Product	Ratio of Net Value Product to Gross Value Product	Net Value Product
	(1)	(2)	(3)	(4)	(5)
All crops	1,427.78	150.03 (a	1,577.81	n.e.	1,508.2
Palay	615.37	6.15	621.52	0.95	590.4
Corn	115.31	17.30	132.61	0.98	130.0
Copra	242.99	4.86	247.85	0.98	242.9
Coconuts not used for copra	20.76	6.23	26.99	0.98	26.4
Sugarcane	89.62	4.48	94.10	0.81	76.2
Abaca	36.65	5.50	42.15	0.98	41.3
Tobacco	46.04	0.07	46.11	0.91	42.0
Native	7.41	0.07	7.48	0.91	6.8
Virginia	38.63	---	38.63	0.91	35.2
Fruits & nuts not included above	94.26	47.13	141.39	0.98	138.6
Banana	22.50	11.25	33.75	0.98	33.1
Jackfruit	13.35	6.68	20.03	0.98	19.6

TABLE II-3
(continued)

	Gross Value of Farm Output (a (1)	Gross Value of Non-Farm Output (2)	Total Gross Value Product (3)	Ratio of Net Value Product to Gross Value Product (4)	Net Value Product (5)
Fruits & nuts not included above (cont'd)					
Lanzon	6.62	3.31	9.93	0.98	9.7
Mango	17.32	8.66	25.98	0.98	25.5
Orange	3.45	1.72	5.17	0.98	5.1
Papaya	3.59	1.80	5.39	0.98	5.3
Pomelo	4.93	2.46	7.39	0.98	7.2
Pineapple	15.02	7.51	22.53	0.98	22.1
Fruits & nuts, n.e.c.	7.47	3.74	11.21	0.98	11.0
Root crops	85.75	34.30	120.05	0.98	117.6
Camote	51.02	20.40	71.42	0.98	70.0
Cassava	15.56	6.22	21.78	0.98	21.3
Gabi	7.35	2.94	10.29	0.98	10.1
Onion	3.29	1.31	4.60	0.98	4.5
Irish potato	3.37	1.34	4.71	0.98	4.6

TABLE II-3
(continued)

	Gross Value of Farm Output (a (1)	Gross Value of Non-Farm Output (2)	Total Gross Value Product (3)	Ratio of Net Value Product to Gross Value Product (4)	Net Value Product (5)
Root crops (cont'd)					
Ubi	3.72	1.48	5.20	0.98	5.1
Root crops, n.e.c.	1.44	0.58	2.02	0.98	2.0
Vegetables not included above	54.78	21.91	76.69	0.98	75.2
Cabbage	5.06	2.02	7.08	0.98	6.9
Dry beans	8.18	3.27	11.45	0.98	11.2
Eggplant	10.03	4.01	14.04	0.98	13.8
Garlic	3.62	1.44	5.06	0.98	5.0
Mongo	12.14	4.86	17.00	0.98	16.7
Tomato	12.55	5.02	17.57	0.98	17.2
Vegetables, n.e.c.	3.21	1.28	4.49	0.98	4.4
Coffee	10.28	---	10.28	0.98	10.1
Cacao	4.35	---	4.35	0.98	4.3
Peanuts, unshelled	5.76	1.44	7.20	0.98	7.0
Crops, n.e.c.	5.86	0.66	6.52	0.95	6.2

TABLE II-3
(continued)

SOURCES: Col. (1): Maulit, letters to the writer (February 11 and April 13, 1960), and estimates by the writer.

(2): Total calculated from Trinidad, ..National Income Accounting..., p. 70 and Maulit, letter (February 11, 1960), and allocated by the writer.

(3): Col. (1) - Col. (2).

(4): Trinidad, ..National Income Accounting..., p. 90. The ratios given there for the tobacco, fruit and nut, root crop and vegetable groups are assumed to apply to all of the individual crops within each of the groups.

(5): Col. (4) x Col. (3).

NOTES: a) Simple average of data for the 1955-56 and 1956-57 crop years.

to specify the direction and degree of error except to a very limited extent. The production of each province is valued by the average price for that province[21] as obtained from the quantity and value of the crop actually sold. To the degree that prices are lower in localities where commercial activity is unimportant[22] the value of production is therefore overstated. However, at least a partial offset exists - the value of output sold is reported, according to the Survey schedule, exclusive of the transportation and marketing costs of the farmer.[23] Deficiencies probably exist in the non-farm data as well. The fact that no breakdown is provided officially suggests that the total is not a precise one. This is in addition to the rough procedure used in allocating the total. Finally, the official commodity costs seem low, but there is no information available to verify this impression. However, even a substantial error in the costs does not affect the net value product to any great extent because the costs are not high to begin with.

The net value product of livestock raising and its products is estimated in the following manner. First, for livestock raising, values are attached to the change in the population of each kind of animal and to the number slaughtered.[24] Slaughter, as defined here, refers to animals deliberately killed to provide meat and to the number dead from other causes but also providing meat. Second, the production of commodities associated with livestock raising, i.e., milk and eggs, is determined and valued.[25] Finally, the commodity costs for livestock raising and its products combined are calculated for each type of animal and allocated between the two types of output according to their value. Tables II-4 through II-7 show how the net value product figures are estimated.

The figures used in this study for the changes in livestock population and the number slaughtered differ from the official figures. The official procedure for deriving the changes in livestock population during 1956 involves, first of all, the conversion of Crop and Livestock Survey inventory information for 1955 and 1956 from a March 1 to a December 31 basis.[26] In addition, the

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[21]Maulit, letters (February 11, and April 13, 1960).

[22]See Republic of the Philippines, Department of Agriculture and Natural Resources, Agricultural Economics Division, Prices Received by Farmers, January, 1957 to December, 1958, p. ii.

[23]Maulit, letter (April 13, 1960).

[24]Exports were negligible in 1956. (See Republic of the Philippines, Bureau of the Census and Statistics, Foreign Trade and Navigation of the Philippines, 1956, p. 311.)

[25]Manure, as a by-product, often has economic value but is not covered here or in the official estimates because of the lack of data.

[26]Trinidad, ...National Income Accounting..., pp. 69, 71 and 1528

TABLE II-4

DERIVATION OF THE NET VALUE PRODUCT ORIGINATING IN THE RAISING AND SLAUGHTERING OF LIVESTOCK (EXCLUDING POULTRY) IN THE PHILIPPINES FOR THE YEAR ENDING MARCH 1, 1957

	Carabaos	Cattle	Horses	Hogs	Goats	Sheep
(1) Farm population, 3/1/56[a]	3,594.68	861.16	218.42	5,749.88	497.85	17.15
(2) Ratio of total population to farm population	1.19080	1.1792	1.3546	1.42189	1.4060	1.000
(3) Total population, 3/1/56	4,280.54	1,015.40	295.87	8,175.69	699.97	17.15
(4) Farm population, 3/1/57	3,584.13	883.04	219.22	6,026.15	530.22	17.92
(5) Total population, 3/1/57	4,267298	1,041.20	296.95	8,568.52	745.48	17.92
(6) Change in total population, 3/1/56-3/1/57	-12.56	25.80	1.08	392.83	45.51	0.77
(7) Number of animals reported slaughtered, 3/1/56-3/1/57	n.e.	279.33	19.64	3,306.06	156.78	2.58
(8) Reported slaughter as a percentage of farm population, 3/1/56	n.e.	32.436	8.991	57.4978	31.491	15.0
(9) Total slaughter, year ending 3/1/57	522.76[b]	329.35	26.60	4,700.84	220.42	2.58
(10) Unit price of livestock, 3/1/56[a]	128.386	139.557	99.155	24.110	10.700	10.660
(11) Unit price of livestock, 3/1/57	125.871	138.120	99.834	23.213	10.556	11.190
(12) Average unit price, 3/1/56-3/1/57	127.13	138.84	99.49	23.66	10.63	10.92
(13) Value of change in total population, 3/1/56-3/1/57[a]	-1.60	3.58	0.11	9.29	0.48	0.01
(14) Unit price of adult animals, 3/1/56	142.70	164.55	110.77	35.18	12.95	12.48

TABLE II-4
(continued)

	Carabaos	Cattle	Horses	Hogs	Goats	Sheep
(15) Value of livestock slaughtered, 3/1/56-3/1/57	70.87	51.48	2.80	157.04	2.71	0.04
(16) Gross value product of livestock raising	69.27	55.06	2.91	166.33	3.19	0.05
(17) Ratio of commodity costs for livestock raising & its products to the gross value product of livestock raising	0.07	0.17	0.46	0.32	---	---
(18) Total commodity costs for livestock raising & its products	4.85	9.36	1.34	53.23	---	---
(19) Commodity costs for livestock raising	4.14	8.43	1.34	53.23	---	---
(20) Net value product of livestock raising	65.13	46.63	1.57	113.10	3.19	0.05
(21) Value of meat produced	83.37	60.54	3.29	184.74	3.19	0.05
(22) Value of hides produced	2.92	2.12	0.12	---	---	---
(23) Gross value product of livestock slaughtering	86.29	62.66	3.41	184.74	3.19	0.05
(24) Net value product of livestock slaughtering	15.42	11.18	0.61	27.70	0.48	0.01

TABLE II-4
(continued)

SOURCES: (1): Maulit, letter (February 11, 1960).
(2): Calculated from Republic of the Philippines, Bureau of the Census and Statistics, Census of the Philippines, 1948, Vol. III, Summary and General Report for the 1948 Census of Population and Agriculture, Part II, Agriculture, p. 2606.
(3): (2) x (1).
(4): Maulit, letter (February 11, 1960).
(5): (2) x (4).
(6): (5) - (3).
(7): Maulit, letter (February 11, 1960)a
(8): $\frac{(7)}{(1)}$ x 100.
(9): $\frac{(8) \times (3)}{100}$.
(10): Calculated from Maulit, letter (February 11, 1960).
(11): Ibid.
(12)a $\frac{(11) + (10)}{2}$.
(13): (12) x (6).
(14): National income worksheets.
(15)a (14) x (9) less 5.0% allowance for slaughter of young animals.
(16): (15) + (13).
(17): National income worksheets.
(18): (17) x (16).
(19): (18) x $\frac{(16)}{(16) + \text{Line (10) of Table II-6}}$.
(20): (16) - (19).
(21): $\frac{(15)}{0.85}$, the 0.85 estimated by the writer.
(22): (21) x 0.035, the 0.035 estimated by the writer.
(23): (22) + (21).
(24): (23) - (15).

NOTES: a) Numbers of livestock are in thousands, unit prices are in pesos, and values are in million pesos.
b) Estimated by the writer.

TABLE II-5

DERIVATION OF THE NET VALUE PRODUCT ORIGINATING IN THE RAISING AND SLAUGHTERING OF POULTRY IN THE PHILIPPINES FOR THE YEAR ENDING MARCH 1, 1957

	Chickens	Ducks	Geese	Turkeys
(1) Farm population, 3/1/56[a]	49,775.77	2,142.91	95.89	37.01
(2) Ratio of total population to farm population	1.310482	1.59416	1.000	1.000
(3) Total population, 3/1/56	65,230.25	3,416.14	95.89	37.01
(4) Farm population, 3/1/57	51,838.70	2,077.78	102.04	41.25
(5) Total population, 3/1/57	67,933.68	3,312.31	102.04	41.25
(6) Change in total population, 3/1/56 - 3/1/57	2,703.43	-103.83	6.15	4.24
(7) Total number slaughtered, 3/1/56 - 3/1/57	65,230.25	3,416.14	95.89	24.67
(8) Unit price of poultry, 3/1/56[a]	1.247	1.674	3.566	5.530
(9) Unit price of poultry, 3/1/57	1.221	1.700	3.375	5.590
(10) Average unit price, 3/1/56 - 3/1/57	1.23	1.69	3.47	5.56
(11) Value of change in total population, 3/1/56 - 3/1/57[a]	3.33	-0.18	0.02	0.02
(12) Unit price of adult birds, 3/1/56	1.46	1.84	4.04	6.66
(13) Value of poultry slaughtered, 3/1/56 - 3/1/57	90.44	5.97	0.37	0.15
(14) Gross value product of poultry raising	93.77	5.81	0.39	0.17
(15) Ratio of commodity costs for poultry raising & its products to the gross value product of poultry raising	0.28	0.69	0.03	0.03

TABLE II-5
(continued)

	Chickens	Ducks	Geese	Turkeys
(16) Total commodity costs for poultry raising & its products	26.25	4.00	0.01	0.01
(17) Commodity costs for poultry raising	7.64	0.67	0.01	0.01
(18) Net value product of poultry raising	86.13	5.14	0.38	0.16
(19) Value of meat produced	95.20	6.28	0.39	0.15
(20) Net value product of poultry slaughtering	4.76	0.31	0.02	---

SOURCES: (1): Maulit, letter (February 11, 1960).
(2): Census...1948...Agriculture, p. 2606.
(3): (2) x (1).
(4): Maulit, letter (February 11, 1960)8
(5): (2) x (4).
(6): (5) - (3).
(7): (3), except for turkeys, which is (3) x 2/3.
(8): Calculated from Maulit, letter (February 11, 1960).
(9): Ibid.
(10): $\frac{(9) + (8)}{(2)}$
(11): (10) x (6).
(12): National income worksheets.
(13): (12) x (7) less 5.0% allowance for slaughter of young poultry.
(14): (13) + (11).
(15): National income worksheets.
(16)8 (15) x (14).
(17): $(16) \times \frac{(14)}{(14) + \text{Line (10) of Table II-7}}$.
(18): (14) - (17).
(19): $\frac{(13)}{0.95}$, the 0.95 estimated by the writer.
(20): (19) - (13).

NOTES: a) Numbers of poultry are in thousands, unit prices are in pesos and values are in million pesos.

TABLE II-6

DERIVATION OF THE NET VALUE PRODUCT OF MILK PRODUCTION IN THE PHILIPPINES, MARCH 1, 1956-MARCH 1, 1957

	Carabaos	Cattle	Goats
(1) Total population, 3/1/56 (thousands)	4,280.54	1,015.40	699.97
(2) Breeding animals as a percentage of total population	50.2	72.6	17.1
(3) Number of breeding animals (thousands)	2,148.83	737.18	119.69
(4) Dairy animals as a percentage of breeding animals	5.0	5.0	5.0
(5) Number of dairy animals (thousands)	107.44	36.86	5.98
(6) Average amount of milk produced per dairy animal per year (liters)	194	291	73
(7) Total amount of milk produced (million liters)	20.84	10.72	0.44
(8) Price per liter (pesos)	0.627	0.627	0.627
(9) Total value of milk production, unadjusted (million pesos)	13.10	6.72	0.27
(10) Total value of milk production, adjusted (million pesos)	11.79	6.05	0.24
(11) Commodity costs of milk production (million pesos)	0.71	0.93	---
(12) Net value product from milk production (million pesos)	11.08	5.12	0.24

SOURCES: (1): Table II-4.
(2): Trinidad, ...National Income Accounting..., p. 156.
(3): (2) x (1).
(4): Trinidad, ...National Income Accounting..., p. 156.
(5): (4) x (3).
(6): Trinidad, ...National Income Accounting..., p. 156.
(7): (6) x (5).

TABLE II-6
(continued)

SOURCES (cont'd)

(8): Unit cost of unprocessed milk used by large manufacturing establishments, as calculated from 1956 Annual Survey of Manufactures, Vol. 1, Series 2, p. 172.
(9): (8) x (7).
(10): (9) corrected for estimated overstatement.
(11): Line (18) of Table II-4 x $\frac{(10)}{(10) + \text{Line (16) of Table II-4}}$.
(12): (10) - (11).

TABLE II-7

DERIVATION OF THE NET VALUE PRODUCT OF EGG PRODUCTION IN THE PHILIPPINES
MARCH 1, 1956-MARCH 1, 1957

	Pure-bred Chickens	Native Chickens	Ducks
(1) Total population, 3/1/56 (thousands)	7,885.97	57,344.28	3,416.14
(2) Layers as a percentage of total population	89.3	73.6	78.1
(3) Number of layers (thousands)	7,042.17	42,205.39	2,668.01
(4) Average number of eggs laid per layer per year	100	50	100
(5) Total number of eggs laid (millions)	704.2	2,110.3	266.8
(6) Percentage of total number of eggs used for food	90.0	90.0	95.0
(7) Number of eggs used for food (millions)	633.8	1,899.3	253.5
(8) Price per egg (pesos)	0.11	0.09	0.12
(9) Total value of egg production, unadjusted (million pesos)	69.71	170.93	30.42

TABLE II-7
(continued)

	Pure-bred Chickens	Native Chickens	Ducks
(10) Total value of egg production, adjusted (million pesos)	66.22	162.38	28.89
(11) Commodity costs of egg production	18.61		3.33
(12) Net value product of egg production	209.99		25.56

SOURCES: (1): Table II-5.
(2): Trinidad, ...National Income Accounting..., p. 155.
(3): (2) x (1).
(4): Trinidad, ...National Income Accounting..., p. 155.
(5): (4) x (3).
(6): Trinidad, ...National Income Accounting..., p. 155.
(7): (6) x (5).
(8): Agricultural Economics Division, Prices Received by Farmers..., Tables 16a, 17a, 18a and 19a.
(9): (8) x (7).
(10): (9) corrected for estimated overstatement.
(11): Line (16) of Table II-5 x $\frac{(10)}{(10) + \text{Line (14) of Table II-5}}$.
(12): (10) - (11).

growth of the carabao (water buffalo), hog, chicken and duck populations is inflated by 71%, 29%, 19%, and 44% respectively because of "understatements of the 1948 agricultural census as compared to subsequent agricultural statistics compiled from the reports of municipal mayors to the Bureau of the Census and Statistics."[27] As regards the number slaughtered, separate data are used for poultry and for other livestock. For carabaos, cattle, hogs, etc. the official slaughter figures are those of the year ending March 1, 1956 as reported in the 1956 Crop and Livestock Survey while in the case of poultry the number slaughtered is assumed equal to the January 1, 1956 population.[28] The slaughter figures for carabaos, hogs, chickens and ducks are inflated by the same percentages as the figures on population growth for these animals.

In estimating the changes in livestock population for this study, March 1, 1956 and 1957 Survey data are used, and as is, rather than the March 1, 1955 and 1956 figures, converted to a year-end basis. The revised estimates therefore do not refer precisely to the calendar year; there is really no accurate way of converting to that basis. The official procedure seems to involve the use of growth rates between March 1, 1955 and 1956. However the rates of change in that period for some animals differ quite markedly from the rates between March 1, 1956 and 1957 (e.g., +9.6% versus -0.3% for carabaos and 24.6% versus -3.0% for ducks);[29] this makes interpolation or extrapolation very risky. The differences also suggest, of course, that the Survey figures themselves may not be entirely accurate.

In the livestock figures presented here the percentage supplements which are part of the official estimates are omitted also. The supplements are not even appropriate to the official figures since they are carry-overs from a previous estimating procedure.[30] The estimation of the changes in livestock population also involves the inclusion of non-farm livestock which are not counted in the Surveys. This is accomplished by calculating ratios of total livestock to farm livestock utilizing data from the 1948 Census of Population and Agriculture.

The estimates of livestock slaughtered also diverge from the official figures. In the case of poultry, opening population data are used[31] as in the official procedure - but the March 1, 1956 inventory is employed instead of the

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[27] Ibid., p. 71.

[28] Ibid., pp. 151-153 and Maulit, letter (February 11, 1960). In the case of turkeys two-thirds of the January 1 population is used.

[29] The inventory figures for 1955 are from Trinidad, ...National Income Accounting..., p. 152, and for the other two years they are from Maulit, letter (February 11, 1960). The 1956 figures in Maulit differ slightly, but only slightly, from those in Trinidad.

[30] Trinidad, ...National Income Accounting..., p. 121.

[31] Imports of poultry were negligible in 1956. (See Bureau of the Census and Statistics, Foreign Trade...1956, p. 44.)

one for January 1, the percentage supplements are omitted and non-farm population is included. For cattle, horses, hogs, goats and sheep Crop and Livestock Survey data covering slaughter for the year, March 1, 1956-March 1, 1957, provide the basis. The Survey figures cover only animals slaughtered at abattoirs and on farms, however.[32] It is therefore assumed that most of the slaughter of non-farm livestock is not counted. To include it the ratios of the number of animals slaughtered, by kind of animal, to the farm population on March 1, 1956 are applied to the total population. To the extent that the abattoir figures include non-farm animals the total slaughter is therefore overstated. However, animal deaths providing meat but not reported as slaughter are also pertinent to the net value product measure and these are apparently not covered in the Survey data. For example, the number of carabaos slaughtered as reported in the Survey comes to only 1.5% of the farm population.[33] Since carabaos are not primarily raised for commercial meat purposes it is presumed that the number of deaths is understated rather than that the population is overstated.[34]

Because the reported figure for carabaos is deficient for the purposes of this study a different procedure is used to estimate the number slaughtered. It involves the assumption that births of carabaos equaled one-eighth of the population on March 1, 1956. The one-eighth figure is obtained by assuming that one-half of the population is female, one-half of the females are mature, and one-half of the mature females give birth to a calf each year.[35] The total number of deaths is then calculated by subtracting the population on March 1, 1957 from the sum of the population on March 1, 1956, the number of births, and the number of imports.[36] The total number of deaths is then assumed to be 5.0% greater than the number slaughtered.

The revision of the official data extends to the prices used to value the changes in livestock population and the number of animals slaughtered.

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[32]Maulit, letter (April 13, 1960).

[33]Data are from Maulit, letter (February 11, 1960).

[34]The percentage for cattle (35.0%), on the other hand, seems high, but in this case there is no way of knowing whether the error lies in the slaughter figure or in the population figure. It is possible that the portion of the non-farm animals which is sent to abattoirs for slaughtering is greater for cattle than for other animals.

[35]These assumptions are used in Republic of the Philippines, Philippine Council for United States Aid, Industrial Development Branch, Industrial Philippines: A Cross Section, p. 243.

[36]Import data are from Bureau of the Census and Statistics, Foreign Trade...1956, p. 44. Imports of carabaos and cattle are not given separately there. The figure for carabaos was estimated by using imports from Indonesia and India; the remainder, from Australia, were taken to be cattle. In any case, imports are quite small relative to the total population. Exports and re-exports were nil in 1956.

Officially, several different sets of prices are used to value the formerd The changes in the number of carabaos, cattle and horses are valued by the unit prices of the March 1, 1956 inventories as reported in the Crop and Livestock Survey. For the rest of livestock aside from poultry, wholesale prices in Manila, apparently of adult animals, are used, while the changes in the poultry population are valued at the retail prices of adult birds in Manila.[37] The use of Manila retail and wholesale prices overstates the value of changes in the livestock population since, in addition to livestock raising, trading and transportation activities are thereby reflected. These activities are covered elsewhere in the estimates of net value product by industry. In the official estimates the number of animals slaughtered is not valued explicitly, the cared of animals slaughtered and the slaughtering of animals being considered one industry.

In this study the change in the population of each kind of livestock is valued at the average of the unit prices on March 1, 1956 and 1957 as reported in the Surveys. The number of livestock slaughtered is valued at the price of adult animals on March 1, 1956,[38] but to allow for the slaughter of young animals the resulting values are reduced by 5.0%.

As for the products of livestock raising, the official procedure for estimating the volume of egg and milk production is followed. It is described by the formula, opening population x estimated ratio of producing animals to the total population x approximate output per producing animal - (in the case of eggs) the estimated number of eggs not used for food. Included is the production of eggs by ducks and by pure-bred and native chickens and of milk by carabaos, cattle and goats.[39] The results in this study diverge from the official figures, however, because of the different data used for the opening population. That is, the March 1, 1956 instead of the January 1, 1956 population is used, non-farm livestock is included, and the percentage supplements are omitted. Actually the supplements are included in the official egg estimate but not in the milk estimate. In making the revision the proportion of pure-bred chickens to the total population is assumed to be the same as the proportion on farms.

Officially, the output of eggs and milk is valued at retail prices in Manila.[40] In addition it appears that the price of processed rather than unprocessed milk is used. Because of the resulting upward bias different data are employed hered For eggs, average prices received by farmers during 1957 are utilized and the resulting values are reduced by 5.0% to counteract an upward bias that exists even in these prices. The price data are obtained by mail

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[37]National income worksheets.

[38]The prices of adult animals on March 1, 1957 were not available to the writer; the prices of animals as a whole showed little change between March 1, 1956 and 1957, however (see Tables II-4 and II-5).

[39]Trinidad, ...National Income Accounting..., pp. 72-74 and 155-156.

[40]National income worksheets.

survey and the response rate of persons for whom postal facilities are not readily accessible is low. Most of these persons live outside of the main trading centers and the prices they receive are likely to be lower than those prevailing elsewhere.[41] An annual average of monthly prices ordinarily creates an upward bias also because more of a commodity, especially a perishable one, is likely to be sold below the average than above it. Egg prices show little fluctuation from month to month, however - although this may be less true where trading is thin. Because price fluctuations were apparently narrow there is little error in using prices for calendar 1957 to value output for the year ending March 1, 1957. Earlier price data are not available. Milk is valued at the unit cost of unprocessed milk to large manufacturing establishments and an adjustment is again made for overstatement. In this case 10.0% is deducted because the unit cost reflects some distribution and because the unit price of raw milk is probably lower in areas where it is not usually sold to processing plants. In the official estimates the same price is used for all types of milk and that procedure is followed here.

In the official estimates of the commodity costs of livestock raising and its products, cost ratios are applied to the value of output in livestock raising only; milk and eggs are considered by-products. The same procedure in obtaining the costs is followed here but they are then allocated between livestock raising and its products because different indicators are used for each. As with crops, the ratios were obtained from various studies conducted at various times and their validity in 1956 is uncertain apart from their reliability *per se*. It should be noted that in the official estimates for some of the livestock the ratios are applied to production valued at wholesale and retail prices in Manila while here the same ratios are applied to the values from the Crop and Livestock Surveys. No information is available as to the basis upon which the ratios were originally calculated. It is presumed that Manila prices were not used, however - since the costs were probably obtained from farms it would seem that the values upon which the ratios are based were also. One bit of evidence to support this presumption is that when the ratio for ducks (0.69)[42] is applied to the Manila retail price the result, which is the commodity costs of duck raising according to the official specifications, comes out to be higher than the price of ducks themselves according to the Crop and Livestock Survey. The evidence is not conclusive, however, because of possible errors in the cost and price figures.

As stated previously, in the official estimates the slaughter of animals and the raising of animals for slaughter are combined; here they are treated separately because different types of indicators are used for each. The estimates of the net value product of animal slaughter in this study are rough ones. Since raw material costs account for a large portion of the value of meat produced the value of the poultry slaughtered is assumed to be 95% of the value of poultry meat and the value of the other livestock slaughtered to be 85% of the value of other meat. Before commodity costs

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[41] Agricultural Economics Division, Prices Received by Farmers..., p. ii.

[42] Trinidad, ...National Income Accounting..., p. 72.

are deducted, however, the value of hides is added to the value of carabao, cattle, and horse meat. It is estimated by assuming that hide value is 3.5% of meat value, an assumption based on an examination of meat and hide values for 1956 and 1957 and allowing for both hides without economic value and by-products aside from hides. The data on livestock slaughtering appear in Tables II-4 and II-5.

The estimates of net value product for livestock raising and its products and for livestock slaughtering suffer from several possible sources of error. Probable deficiencies in the data from the Crop and Livestock Surveys have been mentioned previously. These are especially pertinent to the change in the livestock population which can be made quite inaccurate by errors of opposite direction in the populations at the beginning and end of the period. The accuracy of the figures on farm versus non-farm population, milk and egg production, the number of poultry slaughtered, and the net value product of slaughter is also uncertain. It should be mentioned that a rough estimate of the weight of the livestock slaughtered during the year indicates a per capita consumption of about 18 or 19 kilograms which does not seem unreasonable. Livestock raising and slaughtering also suffer from the same price biases as do crops. Inadequate weight is given to the probably lower prices in localities where trading is thin and the prices are exclusive of transportation and marketing costs. However, these costs are probably less important for livestock than for crops. Final possible sources of error for livestock raising and its products lie in the estimates of commodity costs for livestock raising and its products as a whole and in the allocation between them.

The net value product for forestry is also a revision of the official data. In this study the production of lumber is included in manufacturing rather than in forestry. Also timber production is valued differently. A minor revision is the addition of a rough estimate for miscellaneous forest productsd

For the official valuation of timber production wholesale prices in Manila are used.[43] The unit value of timber according to the official figures comes to ₱ 240.4 per thousand board feet.[44] There are several reasons for believing this to represent a substantial overstatement. First of all, in 1956 timber exports had a unit value of only ₱ 99.81 per thousand board feet.[45] Secondly, the estimated unit cost of timber used by large unworked-lumber establishments comes to even less,d ₱ 53.92 per thousand board feet.[46] The most

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[43] Ibid., pp. 74 and 123.

[44] Calculated from Ibid., p. 157.

[45] Calculated from Bureau of the Census and Statistics, Foreign Trade... 1956, pp. 333-334. Timber exports amounted to 45.9% of reported production.

[46] The estimate is derived by first multiplying the unit value of rough lumber sold by large manufacturing establishments (₱ 185.34 per thousand board feet) by the ratio of raw material costs to value of products sold by large unworked-lumber establishments (0.58186) to obtain the cost of timber used per thousand board feet of lumber (₱ 107.84). (Data are from 1956 Annual Survey of Manufactures, Vol. 1, Series 2, pp. 103, 109, and 169.) This result is in turn

conclusive proof of overstatement in the unit value of timber production, however, is that the net value product in lumber production is negative if the official figure is used. This is not readily apparent in the official worksheets, or in Trinidad, because the official net value product in forestry is actually obtained by starting out with the total value of timber production and then subtracting the portion converted to lumber and adding the value of lumber production.[47] The reason for the negative figure would seem to be that the relative prices of timber and lumber at the wholesale level in Manila are not the same as the relative prices of timber and lumber at integrated logging and milling operations in the forest lands. In the official estimates lumber is also valued at Manila wholesale prices.

In this study for valuation and indicator purposes timber production is divided into production for export and for home use. The net value product per unit of export timber is higher than the net value product per unit of domestic timber as the best quality logs are shipped abroad.[48] The export value (₱188.01 million) is used for the portion of production sent abroad, and the estimated unit cost of timber to large unworked-lumber manufacturing establishments is used to value the rest of production (1,037 million board feet[49]). The unit cost to these establishments is deemed typical of the price of non-export timber for two reasons. In 1956, 80.4% of domestic timber consumption was in the form of lumber[50] and most of the lumber was produced in large mills,[51] which are usually closely integrated with logging operations at the timber sources. The value of domestic timber is understated in one respect because not all production is recorded.[52] The value of export timber is also too low to the extent that exporters under-valued shipments in order to conceal dollar acquisitions. Export values do include distribution costs but for Philippine timber sold abroad these are minor.[53]

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multiplied by 0.5 on the assumption that one board foot of lumber requires two board feet of timber.

[47]See Trinidad, ...National Income Accounting..., p. 157.

[48]United States, Bureau of Foreign Commerce, Investment in the Philippines: Conditions and Outlook for United States Investors, p. 31.

[49]The total production figure is from Central Bank, Statistical Bulletin IX (December, 1957), Table 76.

[50]Ibid., for lumber production, converted to timber consumption at two board feet of timber for each board foot of lumber.

[51]See the section in this chapter on manufacturing.

[52]United States, Bureau of Foreign Commerce, Investment in the Philippines..., p. 31.

[53]Stanford Research Institute, An Economic Analysis of Philippine Domestic Transportation, Vol. II, The Demand for Transportation: Commodity Flows and Passenger Movements, p. 248.

From the value of timber production 3%, the official figure,[54] is deducted to allow for commodity inputs, making the total net value product ₱ 139.6 million. The figure for forestry as a whole is set at ₱ 145.0 million to allow for miscellaneous forest products such as firewood, charcoal and resins. The figure for miscellaneous forest products is a rough estimate based upon exports and other data. To complete the estimates, indirect taxes of ₱ 2.9 million, 1.8 million and 0.3 million are added to the net value product of export timber, domestic timber and forestry, n.e.c., respectively.

For the estimates of net value product in fishing the official data provide the basis although they are revised somewhat. Officially, fishing is divided into three parts. Commercial fishing refers to the operations of vessels licensed by the Bureau of Fisheries (i.e., those over three tons). Fishponds can be thought of as fish farms. Municipally licensed and sustenance fishing includes the operations of smaller craft licensed by municipalities and other local fishing usually for direct consumption. Fishpond production is derived from the area leased for fishpond purposes and from an estimated yield per hectare. The output of municipally licensed operators and sustenance fishermen is obtained from reports by municipal authorities.

There are reasons for believing the quantity figures for fishponds and for municipal and sustenance fishing to be too low. The yield figure, 350 kilograms per hectare, used to estimate fishpond production is derived from pre-World War II data.[57] One postwar source reports yields of from 300 to 1,200 kilograms per hectare.[58] Partly counteracting the understatement in yield is the fact that land leased for fishpond purposes is often not developed.[59] As for municipal and sustenance fishing, the reports of municipal officials are seriously limited in coverage.[60]

Whereas the quantity of fish output is too low the prices used to value the production are too high. The production of commercial fishing vessels and fishponds is valued at retail prices in Manila and the municipal and sustenance catch at retail prices in the provinces.[61] The most important source of

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[54]Trinidad, ...National Income Accounting..., pp. 74-75.

[55]Ibid., pp. 75-76.

[56]Commercial operators are required to pay a fee per ton of fish caught.

[57]Trinidad, ...National Income Accounting..., pp. 76 and 122.

[58]United States, Bureau of Foreign Commerce, Investment in the Philippines..., p. 33.

[59]Trinidad, ...National Income Accounting..., p. 122.

[60]Ibid. See, also, United States, Economic Survey Mission to the Philippines, Report on Agriculture, Forestry and Fishing, p. 18.

[61]Letter to the writer from Justo R. Montemayor, In-charge, Fisheries Economics and Statistics Section, Bureau of Fisheries, Department of Agriculture and Natural Resources, Republic of the Philippines (July 3, 1959).

overstatement is the use of retail prices instead of prices received by fishermen. In some cases, especially with municipal and sustenance fishing, fishermen may sell their product directly to the consumer, but to the extent there was independent distribution overstatement existss A similar error arises from the use of average prices during the year. This leads to too large a value because more fish of a given kind is likely to be sold below its average price than above it. Since fish is perishable there is little opportunity to hold it off the market in anticipation of high prices. The error is probably most important for municipal and sustenance fishing because in provincialoareas, where most of this fishing is done, prices may fluctuate more widely than in Manila because of irregular supply. Finally, in the case of the fishpond catch Manila prices are generally higher than those in the rest of the country.s[62] In the case of the commercial catch some prices are higher in Manila and some are lower.[63] It is quite possible that the prices used to value the municipal and sustenance catchsare not typical of the catch as a whole but the direction of the error is uncertains The prices were obtained from only a few municipal officialss Cooperation between the municipalities and the Bureau of Fisheries is strictly voluntary and not always forthcoming. Indeed the 1956 unit price is actually sthe one for 1955 since the Bureau could not obtain enough information in 1956.[64] If retail prices of fish in Manila are any indication, the prices in the rest of the country increased slightly in 1956.[65]

It is most likely that the overstatement in prices is greater than the understatement in quantity with the net upward bias probably being the greatest in the case of commercial fishing. Therefore, to improve the accuracy of the weights the gross value product of commercial fishing is reduced by 20.0% (from ₱ 70.82 million to ₱ 56.65 million) and the gross value product of fishponds and of municipal and sustenance fishing by 5.0% each (fromsP 49.64 million to ₱ 47.15 million and from ₱ 228.63 million to ₱ 217.19 million).[66]

To complete the estimates of net value product the official ratios of net to gross value product for commercial, fishpond, and municipal and sustenance fishing production (0.70, 0.95, and 0.98 respectively)[67] are applied to the revised gross value product figures, making the results ₱ 39.65

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[62]Justo R. Montemayor, letter (April 7, 1960).

[63]Ibid.

[64]Ibids

[65]The rise in Manila prices was 2.7% (calculated from Central Bank, Statistical Bulletin, IX (December, 1957), Table 96).

[66]The original figures are from Trinidad, ...National Income Accounting..., p. 77.

[67]Trinidad, ...National Income Accounting..., p. 77.

million, ₱ 44.79 million and ₱ 212.84 million. The net value product for fishing as a whole in this study also includes an estimate of ₱ 5.0 million for fishing, not elsewhere classified. This covers mollusks used for duck feed, shells, coral and similar products. As in the case of miscellaneous forest products this estimate is a rough one based on exports and other data.

III. MINING AND QUARRYING

The net value product of mining and quarrying is measured by deducting the estimated cost of commodity inputs from the official gross value product figures. The latter are obtained from the Philippine Bureau of Mines and cover practically all of the mining and quarrying operations in the country.[68] Officially, a deduction of 26.2% of the gross value product of mining and quarrying as a whole is made to derive the net value product for the industry.[69] The deduction is based on data reported to the Central Bank of the Philippines by firms accounting for about half the total value of production and covers power consumption, depreciation, amortization and indirect taxes. For the purposes of this study only power consumption and indirect taxes are deducted. Depreciation and amortization are considered part of net value product. Conceptually indirect taxes also should not be deducted. However, in allocating indirect taxes by industry data from government sources are used for all industries for reasons of convenience and accuracy. Thus the business figure for indirect taxes is deducted now because the government data are added later. This procedure is followed throughout the study.

Indirect taxes amount to 7.8% of the gross value product of mining and quarrying as a whole and power consumption to 5.1% in the official data. No mention is made of other commodity inputs such as fuel and supplies used; so approximately another 5% is allowed for these, making the total roughly 18%. To put all the components of mining and quarrying on a net value product basis 18% is deducted from the gross value product of each. Because the ratio of commodity inputs to gross value product is likely to be relatively low for most mining and quarrying, neither the rough estimate of the value of commodity inputs nor the assumption that the ratio is the same for all the components of the industry probably leads to serious error. Table II-8 shows the derivation of the net value product in mining and quarrying.

Aside from the different coverage of costs the net value product total in Table II-8 differs from the official one because the production of cement and lime is included in manufacturing in this study.[70] The quarrying of limestone, included with cement and lime production in the official estimates, is

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[68] Ibid., p. 79.

[69] Ibid., pp. 79, 158-159.

[70] Consorcio D. Roa, "Non-Metallic Mineral Production of the Philippines, 1956," American Chamber of Commerce /of the Philippines/ Journal, XXXIII (March,

counted in mining here2 The gross value product of limestone quarrying is assumed equal to the cost of limestone used by large manufacturing establishments.[71] This assumption seems reasonable because most limestone quarrying is physically integrated with cement and lime productions Also cement production, in which most of the limestone is used, is restricted to establishments employing more than 20 personss

TABLEs II-8

NET VALUE PRODUCT IN MINING AND QUARRYING IN THE PHILIPPINES, 1956
(million pesos)

Industry	Gross Value Product (1)	Net Value Product (2)
MINING AND QUARRYING	167.1	139.5[a]
Gold	44.6	36.4
Copper	47.1	38.6
Chromite	27.8	22.8
Iron	23.2	19.0
Coal	3.6	3.0
Limestone	6.2	5.1
Mining & quarrying, n.e.c.	14.6	12.0

SOURCES: Col. (1): Trinidad, ...National Income Accounting..., p. 158 and estimates of the writer.
Col. (2): Col. (1) x 82%.

NOTES: (a Includes ₱ 2.5 million of unallocated indirect taxes (See Appendix II-1).

1957) 125 contains detailed information on the value of lime and other non-metallics produced that permits the deduction from the official gross value product.

[71] 1956 Annual Survey of Manufactures, Vol. 1, Series 2, p. 1728

IV. MANUFACTURING

For manufacturing, entirely new estimates of net value product are preparedoin this studyo They are built on data from the 1956 Survey of Manufactures. The major part of the official estimates of net value product (74.4% of the total) deals with "manufacturing propero" It is deficiencies in this segment which have led to the preparation of the new figures. The rest of the official estimates cover the processing of major agricultural products (rice, corn and sugar) and the manufacture of certain products destined primarily for export (largely embroideries, other handicrafts and molasses). These sectors are also covered by the new figures.

The official net value product data for manufacturing proper are derived as follows.[72] From the reports of 1,585 cooperating establishmentsoout of a total list of 8,258, data on the value of product for about 220 industry sub-groups were obtained. To arrive at the total gross value product in each sub-group the value of production per reporting establishment is multiplied by the total number of establishments in the category. Value added ratios are then applied to the gross value product of each sub-group to obtain the net value product. The ratios were estimated from cost data submitted to the Central Bank of the Philippines by firms applying for allocations of dollars to buy goods from abroad.

The reliability of these estimates has been questioned.[73] First of all, there is the possibility of bias in the cost data submitted for dollar allocations. Secondly, the representativeness of the establishments whose figures are utilized is questionable. The sample which contributed cost information fails to cover establishments not purchasing either raw materials or capital equipment directly from abroad during the year. But, even more important, the sample providing the gross value product data was not selected beforehand; it consists merely of that portion of the total number of manufacturing establishments which cooperated by responding to the questionnaires sent to them.[74] Finally, the official estimates fail to cover all manufacturing establishments. Even excluding activities not considered part of manufacturing proper there are well over 8,258 manufacturing operators in the Philippines. For example, the 1948 Census of Manufactures covered a total of 29,463 operators while the 1938 Census, aiming at more complete coverage of small-scaleoand household industry, included 139,407.[75]

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[72] Trinidad, ...National Income Accounting..., pp. 80-85 and 160-162.

[73] Ibid., p. 125. The following discussion is an extension of the comments made therein.

[74] Letter to the writer from Mrs. Fanny Cortes Garcia, In-charge, Department of Economic Research, Central Bank of the Philippines (February 4, 1960).

[75] Republic of the Philippines, Bureau of the Census and Statistics, Census of the Philippines, 1948, Vol. IV, Economic Census Report, p. 593.

The data in the 1956 Survey of Manufactures, which provide the foundation for the new estimates of net value product, were obtained as follows.[76] The Survey covered all known manufacturing establishments with a total employment of 5 or more workers in 1955 together with establishments of a like size which began operations in the first three quarters of 1956. Unpaid members of a proprietorts familytwere counted in-thetemployment figures providing they worked in the establishment for atileast one-third of the normal working timet Establishments employing 21 or more persons including working owners (hereafter called "large") were completely surveyed while those employing 5 to 20 persons (hereafter called "medium") were sampled.[77] A stratified random sample was used, with the stratification based on major industry group classification (e.g., manufactured food), size and location.

For large establishments data are available by major industry group, industry group (e.g., grain mill products) and, in some cases, industry subgroup (e.g., rice mill products). For medium establishments the availability of data is limited by the sample to the major industry group level. Included in the information provided by the Survey is value added by manufacture during 1956. This is defined as the total value of products sold, by-products, receipts from contract work performed for others, and repair and othert receipts, less the total cost of materials, supplies, containers and fuelst used, electric energy purchased, and contract work performed by otherst

To use the Survey material for the purposestof this study it is necessary (1) to adjust the net valuetproduct figures from the Survey definition to the concept introduced intChapter I and (2) to supplement the Survey figures with industry group or sub-group data for medium and small establishments. The second is by far the more difficult taskt

There are three differences between the Survey definition and the concept pertinent to this study. First of all,tthe former refers to the value of output sold and the latter to thetvalue of output produced. The value of production will be greater than that of sales if the value of finished-goods and work-in-process inventories combined increases during a given period, and less if it decreases. Data on changes in the value of inventories by type are available from the Survey; so the adjustment is easily made.[78] Secondly, the Survey concept does not cover the value added through own-account capital formation. However, in the Survey also, the costs of taxes, business andtprofessional services, communications, and minor repairs and maintenance purchased fromtoutside the establishment are not deducted in computing net value product. On the assumption that each of the two factors just about offsets the other in most cases no adjustment is made for either one. Any difference which does exist cannot be very significant since neither of the factors is likely to be of major importance for most manufacturing establishments relative to net value product.

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[76] 1956 Annual Survey of Manufactures, Vol. 1, Series 2, pp. 1-10 and 225-240 are devoted to a discussion of definitions and procedurest

[77] Of the total number of establishments 1,833 were large and 5,375 were medium.

[78] The figures in Tables II-9 andtII-10 reflect the adjustment.

For two major industry groups the data in this study are more detailed than in the Survey. Distilled, rectified, and blended liquors on the one hand and fermented beverages on the other are grouped together in the Survey. To obtain the net value product of each for large establishments, the total is allocated according to the value of distilled, rectified, and blended liquors sold as compared to the value of fermented beverages sold.[79] A similar procedure is used for breaking down the net value product of cigars and cigarettes combined.

On the whole, however, the data in this study are less detailed than in the Survey. Separate estimates of net value product are not prepared for every category listed there. Where separate estimates are of limited statistical significance or little analytical use or where direct indicator information is not available, the figures on net value product for large establishments are combined in a miscellaneous category: manufacturing, not included elsewhere. Table II-9 shows the absolute and relative size of the net value product allocated to the miscellaneous category. As can be seen there, 21.7% of the net value product for large establishments was so assigned.

The net value product for medium and small establishments is derived in various ways. Generally the derivation involves the utilization of reported figures or estimates by the writer of (1) the total output of an important product or (2) the total input of an important commodity or (3) total employment, in conjunction with the data for large establishments from the Survey. The results are presented in Table II-10.

For five groups the net value product of medium and small establishments is assumed to be nil. These are centrifugal sugar mill and sugar refinery plant products, desiccated coconut, glass containers, cement, and products of petroleum and coal. In the Survey no explicit figures are given for products of petroleum and coal in order to avoid disclosing information about the operations of individual establishments.[80] Instead the data are included with the Survey figures for miscellaneous manufactures. Among the miscellaneous manufactures is an unspecified group of 8 establishments with a net value product of ₱ 74.5 million. This figure is used as the one for petroleum and coal products. There are no miscellaneous manufacturing industries in the Philippines with such a large net value product.[81] Further grounds for using the figure is the extremely high net value product per employee (₱ 96,300)[82] which suggests that the group does include the dominant

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[79] 1956 Annual Survey of Manufactures, Vol. 1, Series 2, p. 167.

[80] This is standard procedure in government economic surveys in many countries of the world, including the United States.

[81] Miscellaneous manufacturing usually covers such products as scientific and musical instruments, watches and jewelry, novelties, etc.

[82] Table II-10 and 1956 Annual Survey of Manufactures, Vol. 1, Series 2, p. 41.

TABLE II-9

ABSOLUTE AND RELATIVE NET VALUE PRODUCT FOR LARGE MANUFACTURING ESTABLISHMENTS REALLOCATED TO MANUFACTURING, NOT INCLUDED ELSEWHERE, 1956

Industry	Total Net Value Product, Large Establishments (million pesos)	Net Value Product Reallocated to Manufacturing, not included elsewhere (million pesos)	Percent of Total Reallocated
	(1)	(2)	(3)
Food, manufactured	227.8	33.3	14.6%
Beverages	96.3	---	---
Tobacco products	71.0	---	---
Textiles & finished textile products	87.5	37.1	45.8
Wood products, except furniture	46.2	1.0	2.1
Furniture & fixtures	7.6	7.6	100.0
Paper & paper products	16.2	4.1	25.0
Printed & published materials & allied products	28.1	---	---
Leather products	2.5	2.5	100.0
Rubber products	8.4	8.4	100.0
Chemicalss& chemical products	88.3	26.4	29.8
Products of petroleum & coal	74.5	---	---
Non-metallic mineral products, except products of petroleum & coal	41.4	9.0	21.0

TABLE II-9
(continued)

Industry	Total Net Value Product, Large Establishments (million pesos) (1)	Net Value Product Reallocated to Manufacturing, not included elsewhere (million pesos) (2)	Percent of Total Reallocated (3)
Basic metal products & other metal products, except machinery & transportation equipment	39.1	23.5	60.1%
Machinery, except electrical machinery	12.0	12.0	100.0
Electrical machinery, apparatus, appliances & supplies	7.4	7.4	100.0
Transportation equipment	19.2	4.1	21.0
Miscellaneous manufactures	16.3	16.3	100.0
ALL MANUFACTURING	889.8	192.7	21.7%

SOURCES: Col. (1): 1956 Annual Survey of Manufactures, Vol. 1, Series 2, pp. 113-117 and 135-141.
Col. (2): Determined by the writer.
Col. (3): $\frac{\text{Col. (2)}}{\text{Col. (1)}} \times 100.0$.

TABLE II-10

NET VALUE PRODUCT IN PHILIPPINE MANUFACTURING, 1956
(million pesos)

Industry	Net Value Product, Large Establishments (1)	Net Value Product, Other Establishments (2)	Total Net Value Product excluding Indirect Taxes (3)	Total Net Value Product including Indirect Taxes (4)
MANUFACTURING	889.8	400.9	1,290.7	1,482.1[a]
Food, manufactured	190.6	233.9	424.5	432.7
Milled rice products	1.6	185.0[b]	186.6[b]	188.0[b]
Milled corn products	1.6	21.2[b]	22.8[b]	23.5[b]
Bakery products	9.7	21.0	30.7	30.7
Centrifugal sugar mill & sugar refinery plant products	164.4	---	164.5	170.1
Muscovado & panocha	---	6.7[b]	6.7[b]	6.7[b]
Desiccated coconut	13.2	---	13.2	13.7
Beverages	96.3	1.9[c]	98.2[c]	121.5[c]
Distilled, rectified & blended liquors	12.6	0.2[c]	12.8[c]	22.0[c]
Fermented beverages	37.9	0.5[c]	38.4[c]	51.2[c]
Soft drinks & carbonated water	45.7	1.2[c]	46.9[c]	48.3[c]

TABLE II-10
(continued)

Industry	Net Value Product, Large Establishments (1)	Net Value Product, Other Establishments (2)	Total Net Value Product excluding Indirect Taxes (3)	Total Net Value Product including Indirect Taxes (4)
Tobacco products	71.0	2.1	73.1	187.4
Cigarettes	59.1	0.5	59.6	173.4
Cigars	11.9	1.6	13.5	14.0
Textiles & finished textile products	50.4	67.9	118.3	118.4
Cotton yarn)	25.3(d	5.8	8.9	8.9
Cotton & rayon fabrics)			22.2	22.2
Finished textile products of cotton & rayon fabrics	25.1(e	62.1	87.2	87.3
Wood products, except furniture	45.2	4.0	49.2	49.2
Sawmill & planing mill products	35.8	3.6	39.4	39.4
Plywood & veneered panels	9.4	0.4	9.8	9.8
Paper & paper products	12.1	2.4	14.5	14.5
Articles of pulp, paper & paperboard	12.1	2.4	14.5	14.5
Printed & published materials & allied products	28.1	6.6	34.7	34.7

TABLE II-10
(continued)

Industry	Net Value Product, Large Establishments (1)	Net Value Product, Other Establishments (2)	Net Value Product excluding Indirect Taxes (3)	Net Value Product including Indirect Taxes (4)
Printed & published materials & allied products (cont'd)				
Newspapers, magazines & periodicals	12.4	3.1	15.5	15.5
Printed & published materials & allied products, n.e.c.	15.6	3.5	19.1	19.1
Chemicals & chemical products	65.8	10.9	76.7	77.4
Vegetable oils	12.2	---	12.2	12.8
Products made largely of coconut oil[f]	27.4	8.0	35.4	35.4
Medical & pharmaceutical preparations	17.2	2.5	19.7	19.8
Paints, varnishes & lacquers	9.0	0.4	9.4	9.4
Products of petroleum & coal	74.5	---	74.5	107.8
Non-metallic mineral products, except products of petroleum & coal	32.4	---	32.4	32.4
Glass containers	10.6	---	10.6	10.6
Cement	21.8	---	21.8	21.8

TABLE II-10
(continued)

Industry	Net Value Product, Large Establishments (1)	Net Value Product, Other Establishments (2)	Net Value Product excluding Indirect Taxes (3)	Net Value Product including Indirect Taxes (4)
Basic metal products & other metal products, except machinery & transportation equipment	15.6	n.e.	15.6	15.6
Miscellaneous primary metal industry products	6.3	n.e.	6.3	6.3
Fabricated wire products	4.4	n.e.	4.4	4.4
Metal shipping barrels, drums, kegs & pails	4.9	n.e.	4.9	4.9
Transportation equipment	15.1	23.0	38.1	39.1
Motor vehicles, except combat vehicles & motorcycles	12.8	n.e.	12.8	13.8
Motor vehicles & cycles, repaired	2.3	23.0	25.3	25.3
Manufacturing, not included elsewhere	192.7	48.2	240.9	245.5

SOURCES: Col. (1): 1956 Annual Survey of Manufactures, Vol. 1, Series 2, pp. 113-117 and 135-141, and Table II-9 of this study.
Col. (2): Estimates of the writer.
Col. (3): Col. (1) + Col. (2).
Col. (4): Col. (3) + indirect taxes as allocated in Appendix II-1.

TABLE II-10
(continued)

NOTES: a) Includes ₱ 5.9 million of unallocated indirect taxes.
b) Based on simple average of data for the 1955-56 and 1956-57 crops years.
c) No estimate made for establishments employing fewer than 5 persons.
d) Comprises the following Survey of Manufactures categories: cotton textile mill products and "other knitting mill products".
e) Comprises the following Survey of Manufactures categories: hosiery knitting mill products, underwear knitting mill products, outwear knitting mill products, men's and boys' ready-made wear, tailor shop manufactures, and modistes' and dress shop products including ready-made women's and children's dresses.
f) Comprises the following Survey of Manufactures categories: vegetable lard and margarine, and soap and other washing and cleaning compounds

establishment in the petroleum and coal products field - the Caltex refinery which opened in 1954. Since the process of concealing information about Caltex and others probably means the inclusion, in the group, of establishments not producing products of petroleum and coal the net value product figure is a little large. Cement establishments also are not explicit in the Survey. The net value product figure used in this study is actually one for an unspecified group in non-metallic mineral products (except products of petroleum and coal), but the value of products sold by this group agrees closely with the value of cement sold.[83]

In several instances no attempt is made to estimate the net value product for medium and small establishments explicitly. These are instances in which the indicator for large establishments would not be accurate when applied to the smaller ones and in which no direct indicator is available for the smaller ones. The industries concerned are vegetable oils; miscellaneous primary metal industry products (i.e., those apart from iron and steel foundry products); fabricated wire products; metal shipping barrels, drums, kegs and pails; and motor vehicles. Considered as industries separate from the above and included in manufacturing, not included elsewhere, are the production of coconut oil as a home industry; blacksmithing and the activities of small metal and machine shops; and the construction of jeep, truck and bus bodies. In the case of beverages, explicit estimates are made for medium establishments but not for small, the latter manufacturing mainly native drinks derived from coconut palms, sugar plants, etc. as contrasted to the larger-scale production of American-style soft drinks and beer.

Total production data are used to derive the figures of total net value product for establishments producing milled rice products, milled corn products and muscovado and panocha.[84] The official data for these groups are not included in manufacturing proper but are estimated separately. The net value product as estimated in this study still differs somewhat from the official figures, however.

The net value product for milled rice and milled corn products differs the least from the official figures. Officially[85] 93.0% of the palay production is assumed to be milled with a recovery by weight of 65.0% milled rice; the rest is considered by-products. The milled rice output and palay input are valued by the 1956 average wholesale prices of the National Rice and Corn Corporation,[86] and average wholesale prices are also used to value the by-products. Non-raw material commodity costs are estimated at 1.5% of the value

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[83]For the figures see 1956 Annual Survey of Manufactures, Vol. 1, Series 2, pp. 110 and 170.

[84]In Table II-10 no figure is given for large establishments in the case of muscovado and panocha because all production is smaller-scale.

[85]Trinidad, ...National Income Accounting..., pp. 81-87 and national income worksheets.

[86]NARIC is a government agency whose function is to stabilize the prices of rice and corn to farmers and consumers.

of milled rice.[87] The official net value product for milled corn products is obtained in practically the same way. In this case, 14.0% of the shelled corn output is deducted for seed, waste, etc. and 30.0% of the remainder is assumed to be milled, with the recovery being 88.0% corn and 12.0% by-product.

Two adjustments are made to the official figures of net value product. First, in order to account for the milling of non-farm palay and corn, the net value product for milled rice products (₱ 194.44 million) is increased by 1.0% and for milled corn products (₱ 20.83 million) by 15.0%.[88] These are the ratios previously estimated for non-farm production of the crops. The results are then reduced by 5.0% each to counteract an overstatementiarising from the use of averages of wholesale pricesiduring the year. As mentioned in the section on agriculture the overstatement arises because more output is likely to be sold below an average price than above it. This kind of error is significant for rice and corn because the prices of these commodities show rather wide within-the-year fluctuations,[89] although NARICiprices are more stable than others in the market. One possible error of uncertain direction is that the NARIC average price for each commodity may not be typical of the average price in general for the commodity. Another exists in the assumptions about the portions of palay and shelled corn output available for milling and the portion of the available corn actually milled. These possibilities are apart from any question about the reliability of the crop production data themselves. The use of crop-year averages to represent calendar-year milling is not believed to lead to a significant error for milled rice and corn products or for muscovado and panochai

For muscovado and panocha an entirely new estimate of net value product is prepared. As suggested in the section on agriculture, the Crop and Livestock Survey data on the value of output seem preferable to the official figure. The calendar-year average calculated from the former[90] comes to ₱ 13.89 million. Usingithe ratio of 12 tons of sugarcane to one ton of muscovado and panocha and the unit value of caneipreviously estimated[91] the cost of raw materials is ₱ 6.85 million. To this is added 5.0% for non-raw material commodity inputs making a total of ₱ 7.21 million for commodity costs and a net value product of ₱ 6.7 million.

Consumption of raw materials is used to provide the estimates of total net value product for operators in textiles and finished textile products. In

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[87]Actually a ratioiof 2.5% is used officially, but 1.0% out of the 2.5% is for capital consumption allowances.

[88]For the official net value product figures see Trinidad, ...National Income Accounting..., pp. 83 and 85.

[89]See Agricultural Economics Division, Prices Received by Farmers..., Tables 1a, 2a and 3a.

[90]Obtained from Maulit, letter (February 11,i1960).

[91]See Table II-2.

the Survey, major industry groups exist for textiles on the one hand and for footwear, other wearing apparel and made-up textile goods on the other hand. In this study, the two groups are combined and broken down somewhat differently; separate estimates are prepared for cotton yarn, cotton and rayon fabrics, and finished textile products of cotton and rayon fabrics (mainly apparel).[92] Fabrics are defined as the products of yarn used in making finished textile products and thus include more than just cloth. The breakdown is not on an establishment basis but rather according to the stage of processing irrespective of where it is carried on. This somewhat artificial technique is employed in order to utilize the available indicator information.

The procedure for cotton yarn is shown in Table II-11. First an estimate is made of the value of raw cotton used by adding domestic production and net imports and multiplying the result by the unit value of raw cotton used by large manufacturing establishments. Then an allowance is made for other commodity inputs used. To obtain the value of yarn output the yarn produced is assumed to weigh the same as the raw cotton used and this quantity is multiplied by the unit cost of cotton yarn used by large manufacturing establishments. However, the procedure gives a ratio between commodity costs and gross value product (0.410) which is quite low when compared with the corresponding ratio for fabrics (0.684)5 Two definite sources of upward bias exist in the gross value product as estimated. The price used to value yarn output reflects distributing as well as manufacturing activity and unsalvageable waste isdnot allowed for. These factors appear to be more than sufficient to outweigh one probable source of downward bias in the gross value product. Apart from distribution costs, the price of yarn used by large manufacturing establishments is likely to be lower than the price of yarn in general. Since the gross value product does seem to be too large as estimated initially it is reduced somewhat in determining the figure for net value product. One possible bias still present is that the price used for cotton yarn may not be typical of all types of cotton yarn.

A similar method is used for cotton and rayon fabrics as Table II-12 indicates. Domestic output and net imports of yarn are added together to obtain the amount of yarn used in fabric production, and the unit cost of yarn used by large manufacturing establishments is used to value the inputs. Again an allowance is made for the value of other commodity inputs used. Fabric output is assumed to weigh the same as yarn input, and the unit value of fabrics sold by large manufacturing establishments is used as the price. But when the gross value product which results, ₱ 83.75 million, is compared with the value of cotton and rayon fabric imports, ₱ 88.55 million[93], it becomes suspect, for the quantity of imported goods was quite a bit higher than the amount produced domestically. Domestic production of cotton and rayon fabrics amounted to

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[92]The production of rayon yarn is insignificant. The production of other textiles (e.g., abaca) and their products is covered in manufacturing, not included elsewhere. Embroidering, which largely involves processing and exporting materials imported on consignment, also is covered in manufacturing, not included elsewhere.

[93]Bureau of the Census and Statistics, Foreign Trade...1956, pp. 141-1538

TABLE II-11

DERIVATION OF THE NET VALUE PRODUCT OF COTTON YARN IN THE PHILIPPINES, 1956

		SOURCES
(1) Production of raw cotton	327.0 tons	(1): Simple average of crop-year figures from Maulit, letter (February 11, 1960).
(2) Net imports of raw cotton	4,817.5 tons	(2): Bureau of the Census and Statistics, Foreign Trade... 1956, pp. 79 and 331.
(3) Total use of raw cotton	5,144.5 tons	(3): (1) + (2).
(4) Estimated unit cost of raw cotton	₱1.513 per kilogram	(4): Unit cost of raw cotton used by large manufacturing establishments asicalculated from 1956 Annual Survey of Manufactures, Vol. 1, Series 2, p.il72.
(5) Total cost of raw cottoniused	₱7.78 million	(5)i (4) x (3).i
(6) Total cost of commodity inputs	₱8.09 million	(6): (5) x 1.04, the latter an estimateibased on the ratio of the total cost of commodity inputs for large cotton textile mills to the cost of raw materials usedi (For the basic data see 1956 AnnualiSurvey of Manufactures, Vol. 1, Series 2, p. 102.)
(7) Yarn production	5,144.5 tons	(7): Assumed to be the same as (3).
(8) Estimated price of cotton yarn	₱3.838 per kilogram	(8): Unit cost of cotton yarn used by large manufacturing establishments as calculated from 1956 Annual Survey of Manufactures,iVol. 1, Series 2, p. 173.
(9) Value of cotton yarn production (unadjusted)	₱19.74 million	(9): (8) x (7).

TABLE II-11
(continued)

		SOURCES
(10) Value of cotton yarn production (adjusted)	₱17.00 million	(10): (9) corrected for estimated overstatement.
(11) Net value product of cotton yarn	₱8.9 million	(11): (10) - (6).

TABLE II-12

DERIVATION OF THE NET VALUE PRODUCT OF COTTON AND RAYON FABRICS IN THE PHILIPPINES, 1956

		SOURCES
(1) Production of cotton yarn	5,144.5 tons	(1): Table II-11.
(2) Net imports of cotton yarn	5,702.4 tons	(2): Bureau of the Census and Statistics, Foreign Trade...1956, pp. 141-142.
(3) Total use of cotton yarn	10,846.9 tons	(3): (1) + (2).
(4) Estimated unit cost of cotton yarn	₱3.838 per kilogram	(4): Unit cost of cotton yarn used by large manufacturing establishments as calculated from 1956 Annual Survey of Manufactures, Vol. 1, Series 2, p. 173.
(5) Total cost of cotton yarn used	₱43.29 million	(5): (4) x (3).
(6) Net imports of rayon yarn	689.0 tons	(6): Bureau of the Census and Statistics, Foreign Trade...1956, p. 143.
(7) Estimated unit cost of rayon yarn	₱3.96 per kilogram	(7): Unit cost of rayon yarn used by large manufacturing establishments as calculated from 1956 Annual

TABLE II-12
(continued)

		SOURCES
		Survey of Manufactures, Vol. 1, Series 2, p. 173.
(8) Total cost of rayon yarn used	₱2.72 million	(8): (7) x (6)s
(9) Total cost of cotton & rayon used	₱46.01 million	(9): (5) + (8).
(10) Total cost of commodity inputs	₱47.85 million	(10): (9) x 1.04, the latter an estimate based on the ratio of the total cost of commodity inputs for large cotton textile and knitted fabric mills to the cost of raw materials used. (See 1956 Annual Survey of Manufactures, Vol. 1, Series 2, p. 102.)
(11) Cotton fabric production	10,846.9 tons	(11): Assumed to be the same as (3).
(12) Estimated price of cotton fabrics	₱7.151 per kilogram	(12): Unit value of cotton fabrics sold by large manufacturing establishments as calculated from 1956 Annual Survey of Manufactures, vol. 1,s Series 2, p. 168.
(13) Value of cotton fabric production	₱77.56 million	(13): (12) x (11).
(14) Rayon fabric production	689.0 tons	(14): Assumed to be the same as (6).
(15) Estimated price of rayon fabrics	₱8.99 per kilogram	(15): Unit value of rayon fabrics sold by large manufacturing establishments as calculated from 1956 Annual Survey of Manufactures, Vol. 1, Series 2, p. 168.
(16) Value of rayon fabric production	₱6.19 million	(16): (15) x (14).

TABLE II-12
(continued)

		SOURCES
(17) Total value of fabric production (unadjusted)	₱83.75 million	(17): (13) + (16).
(18) Total value of fabric production (adjusted)	₱70.00 million	(18): (17) corrected for estimated overstatement.
(19) Net value product of cotton & rayon fabrics	₱22.2 million	(19): (18) - (10).

11,535 tons while imports of cotton and rayon cloth alone were about 18,000 tons.[94] It is doubtful that relatively high domestic prices are sufficient to explain the large gross value product figure completely; and if there is any error in the import figure itois likely to be one of overstatement, because of the over-valuation of imports to evade exchange restrictions. There are several reasons why the gross value product as estimated may very well be inaccurate. In their original form the prices used to value fabric output are given in pesos per yard. For use in this study the figures have to be converted to pesos per tono This is done at a rate of 9,500 square yards per metric ton for cotton and 9,000 square yards per metric ton for rayon. It is assumed that the original "yards" are largely square yards or that fabrics wider and narrower than a yard cancel each other out, but neither of these assumptions may be accurate. In addition the conversion rates themselves are only approximate.[95] Another possibility is that the prices used for cotton and rayon fabrics are not typical of the prices of all types of these fabricso Overstatement definitely arises from the fact that unsalvageable waste in yarn and fabric production is not allowed for in measuring output. Also to a limited extent the figure for fabric output includes production which does not in fact exist. In the case of some knitted finished goods (e.g., socks) there is no intermediate stage between the production of yarn and the finished goods. However, this kind of manufacturing is not

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[94]Table II-12 for domestic production in tons and Table III-5 for imports in square yards. The imports are converted to metric tonsousing ratios that are discussed below.

[95]Food and Agricultural Organization of the United Nations, Per Caput Fiber Consumption Levels, p. 12.

important value-wise. In one respect the gross value product is understated; the prices of cotton fabrics put out by large establishments are usually lower than the prices at which smaller operators sell their product.[96] But since there are strong reasons for believing the net effect to be an overstatement in the gross value product as estimated initially, an adjustment is made as in the case of yarn. There are two errors in the value of commodity costs - one certain and one probable - that are in opposite directions. The input of cotton yarn is overstated to the extent of unsalvageable waste in domestic yarn production while the unit cost of cotton and rayon yarn to large establishments is likely to be lower than the cost to smaller operators.

A slightly different method is used to estimate the net value product accounted for by finished textile products. The value of cotton and rayon fabrics produced domestically (₱ 70.00 million) and the value of imported cotton and rayon fabrics (₱ 88.55 million) are totaled.[97] The result (₱ 158.55 million) is then multiplied by 0.550 to obtain the net value product (₱ 87.2 million). The ratio of net value product to cost of raw materials used in large establishments in the finished knit goods and wearing apparel groups (except umbrellas, parasols, canes and walking sticks, and embroideries) comes to 0.463.[98] But the larger ratio is applied in order to eliminate a downward bias in the total net value product. Two factors contribute to this understatement. First, the input of fabrics is valued at FOB mill and import prices rather than at the unit cost to manufacturers of finished textile products. Secondly, the ratio of net value product to raw material costs is probably higher for smaller operators than for large establishments because of lower labor productivity. These factors are believed to be more significant than those contributing to an overstatement of net value product - the inclusion of unsalvageable waste from domestic yarn and fabric production in the value of raw materials, the use of fabrics elsewhere than in finished textile-product activity, the reflection of some integrated semi-finished and finished goods manufacturing in the 0.463 ratio, and the probability, given the existence of exchange controls, that imports are overvalued. There are two other possible sources of bias the direction of which is uncertain. The prices used for cotton and rayon fabrics may not be typical of all fabrics of these types and the net value product-cost of raw materials ratio used may not be typical of all finished textile products.

There is no point relevant to all three of the textile industries. Because of the use of total consumption in these estimates, activities such as spinning, weaving, or dressmaking by a housewife for her own use are reflected in the net value product figures. This concept of production departs from the definition given in Chapter I; there the manufacture of personal supplies by households solely for the needs of their members was excluded. However,

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[96] See, for example, Philippine Council for United States Aid, Industrial Philippines..., p. 5.

[97] Table II-12 for the value of production; Bureau of the Census and Statistics, Foreign Trade...1956, pp. 141-153 for the value of imports. Exports and re-exports of cotton and rayon fabrics were nil.

[98] Calculated from 1956 Annual Survey of Manufactures, Vol. 1, Series 2, pp. 103, 114 and 137.

the overstatement in the weight of textiles relative to the weights for other industries does not affect the real product for manufacturing as a whole to any great degree, since the net value product in textiles comprises only a small part of the manufacturing total.

Total employment estimates are used to derive the figures on total net value product for the following industries: bakery products; sawmill and planing mill products; plywood and veneered panels; products made largely of coconut oil (i.e., vegetable lard and margarine and soap and other washing and cleaning compounds); and motor vehicles and cycles, repaired. Total employment for eachoof these is estimated either by extrapolating labor data contained in the 1939 and 1948 Population Censuses or by using information from other sources on the total number of establishments in the groupo The result is then multiplied by the estimated net value product per employee. For the latter the figure for large establishments provides the starting point but is adjusted for lower net value product per employee in medium and especially in small establishments. The net value product per employee in smaller establishments can be expected to be lower for two reasonso less continuous operation during the year and lower productivity per employee when he is employed.

For other industries -- beverages; tobacco products; articles of pulp, paper and paperboard; newspapers, magazines and periodicals; printed and published materials and allied products, not elsewhere classified; medical and pharmaceutical preparations; and paints, varnishes and lacquers -- the net value product of smaller establishments is estimated directly. First, the net value product of medium establishments in the appropriate major industry group, which is available from the Survey of Manufactures, is distributed among the various industries comprising the group. Various methods of distribution are used. For example, all the net value product of paper and paper products is assigned to articles of pulp, paper and paperboard; the remainder of the group, paper mill products, is assumed to consist entirely of large establishments. In the case of printed and published materials and allied products, half of the net value product is assigned to newspapers, etc. and half to other printed and published materials. Somewhat similar procedures are used for the other groups. Then, after the net value product for medium establishments in each industry is derived, the figure for small establishments is roughly estimated from the data on the large and medium establishments.

There remains the estimation of the net value product for the smaller establishments in manufacturing, not included elsewhere. For the rest of manufacturing the net value product in smaller establishments amounts to 50.6% of the total for large establishments with the major portion contributed by manufactured food, textiles and textile products, chemicals and chemical products, and transportation equipment. At the same time the first three, together with metal products and machinery, account for the largest share of the net value product allocated to manufacturing, not included elsewhere. However, except in the case of textiles and textile products and possibly manufactured food, the specific industries shifted are not likely to be dominated by small scale activity to the extent that the unallocated industries are. For instance, food industries allocated include canned fruits and vegetables, coffee, and prepared livestock feed which account for about half of the net value product allocated. In the case of chemicals and chemical

products, basic industrial chemicals and toiletipreparations make up about two-thirds of the total shifted to manufacturing, not included elsewhere. While small-scale blacksmithing and metaliwork are undoubtedly important in the Philippines, it is likely that large scale operations dominate the metal products and machinery industries shifted also. In view of these factors smaller establishments are estimated toicontribute somewhat less than 50.6% of the net value product for large establishments in manufacturing, not included elsewhere, and the figure is set at 25.0% or ₱ 48.2 million.

From the discussion of manufacturing it wouldiappear that the possibility of weighting errors arises mainly fromithe estimates for small and medium establishmentsi The industries iniwhich smalleriscale activity is especially important are milled rice products; milled corn products; bakery products; muscovado and panocha; textiles and finished textile products; newspapers, magazines and periodicals; products made largely of coconut oil; motor vehicle repair; and manufacturing, not included elsewhere.

V. CONSTRUCTION

For the net value product in construction new data are prepared in place of the official figure. The latter is obtained by using the value of private and government constructionito extrapolate a benchmark figure on income originating in construction[99] derived from the 1948 Census of Population.[100] Deficiencies in the benchmark figure lead to a substantial understatement of the net value product in 1956 and the same is probably true of the extrapolator.

The income originating in constructioniin 1948 is derived as follows. The income reported received, according to the 1948 Population Census, by persons usually occupied in the construction industry provides the starting point. To this are added estimates of the income originating in farm own-account construction of dwellings and other structures and the income originating in construction but received by those usually occupied in agriculture. Further adjustments, minor in degree, involve the addition of the profits taxes and undistributed profits of incorporated construction enterprises and the deduction of the transfer receipts of persons in the construction industry.

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[99]Income originating is equal toithat portion of output value not accounted for by commodity costs. The net value product in an industry can be measured either by actually subtracting commodity costs from output value as was done for agriculture, mining and manufacturing, or by using the difference betweenithe two (the sum of employee compensation, profits, etc.) or the income originating.

[100]Trinidad, ...National Income Accounting..., pp. 59-64, and 87-89. The extrapolator also includes ₱ 10.0 million per year for own-account construction in agriculture which is not covered in the original data on private constructioni

The income originating in 1948 is understated for several reasons. First is the deliberate (for fear of taxation) or accidental (because of faulty memory, lack of records, etc.) underdeclaration by the population of money income received.[101] Second is the under-coverage by the Census of income in kind.[102] Third is the apparent under-counting of the persons usually occupied in construction. A large number of laborers and workers of other occupations who might have been involved in construction activity appear under government.[103] Fourth, and not quite as significant as the others, is the exclusion of income originating in construction and received by persons usually occupied in other non-agricultural industries. There are two respects in which the income originating in 1948 is overstated. One is the inclusion of income received from work outside of construction by those who are usually occupied in the industry. The other is the probability that the estimate of income received in agriculture but originating in construction is too large. It comes to 30.9% of the net value product in construction exclusive of the income arising from farm own-account construction.[104] These factors seem less important than those contributing to an understatement in the benchmark figure, however.

The main reason for suspecting a downward bias in the extrapolator is the 33.3% decline shown by the private component between 1948 and 1956.[105] This is probably equivalent to an even greater decrease in volume since the wage rates of construction workers increased quite sharply between the two years, if the wage rates on public works projects are any indication, while the prices of construction materials decreased only moderately.[106] While there may have been some contraction because of the completion of postwar reconstruction a drop of one-third seems unlikely. The indicators used for the real product of private construction, while not perfect, suggest no such decline; indeed they suggest the probability of an increase in the value of private construction. The official value extrapolator is based on data for Manila only and it seems likely that construction elsewhere showed a larger rise in the postwar period.[107]

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[101] Censusd..1948...Population, p. ix.

[102] William I. Abraham, Problems of National Income Measurement in Underdeveloped Countries with Special Reference to the Philippines, p. 90b.

[103] Census...1948...Population, pp. 590-613 passim.

[104] See United Nations, Technical Assistance Administration, The National Income of the Philippines and Its Distribution, Table XIII. The author of this report is William I. Abraham, whose doctoral dissertation on the same subject was cited previously.

[105] Calculated from Trinidad, ...National Income Accounting..., p. 88.

[106] See Table III-7 for the wage rates, and Central Bank of the Philippines, Annual Report, 1950, Table 23 and Central Bank, Statistical Bulletin, IX (December, 1957), Table 94 for the prices of construction materials.

[107] Trinidad, ...National Income Accounting..., pp. 126-127.

Also, the Manila figures themselves, which are based on building permit data, may be deficient. Among the weaknesses that arise from figures of this type are differences between permit values and actual costs, unlicensed building, lapsed permits, and time lags between the issuance of permits and actual construction.[108] It is possible that a bias also exists in the government construction figures arising from the use of fiscal-year averages to represent calendar-year data, but the direction of the error, if one does exist, is uncertain.

Both the private and government portions of the extrapolator also contain an upward bias. As mentioned previously, the evidence is that wage rates of construction workers increased quite a bit more than the prices of construction materials which in fact declined moderately. Under these circumstances, and assuming that other factors such as labor productivity and profit margins remained the same, the net value product will show less of a decrease than the gross value production extrapolator.

But this upward bias is probably not sufficient to cancel the downward bias in the extrapolator. Even if it is more than sufficient understatement in the net value product for 1956 will still be significant because of the understatement in the benchmark figure. Therefore, new estimates of net value product, which also provide some detail for the industry, are prepared.

To arrive at the net value product in government construction (₱144.8 million) the total value of government construction (₱ 193.1 million), which is obtained by averaging data for fiscal 1955-56 and 1956-57,[109] is multiplied by 75.0%. A somewhat high ratio is employed for two reasons. First of all, a good deal of government construction (e.g., the building and repairing of third-class roads) requires little commodity input. This is aside from the fact that the commodity inputs used may not be fully covered in the estimates for other industries. Second, the value of government construction given officially is too low. In the official data, government construction is defined quite narrowly as contrasted with private construction which includes alterations and major repairs.[110] For example, in fiscal 1956-57 expenditures on maintenance and repairs amounted to 16.4% of government current outlay.[111] Exactly how much of this large amount is alteration and major repair and should be included in construction expenditures rather than current outlay is unknown, but it would certainly seem that some of it falls in the former category. An additional source of understatement is the apparent inclusion in the income originating in government, and in government current expenditures, of some of the wages and salaries paid by the Bureau of Public Works;[112] at least part of these should be included in the value of government construction. Finally, there is no indication that the value of construction by local governments is included.

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[108] United Nations, Statistical Office, Methods of National Income Estimation, p. 335

[109] Trinidad, ...National Income Accounting..., pp. 88 and 163.

[110] Ibid., pp. 53 and 87.

[111] Calculated from Ibid., p. 116.

[112] Trinidad, letter (April 7, 1960).

The net value product for private construction apart from own-account construction of houses by their occupants is estimated at ₱ 165.0 million. The official value of private construction for 1956, ₱ 202.7 million,[113] is understated for two reasons. As stated earlier, Manila construction, which is used to extrapolate the country total, is believed to have increased less than that in the rest of the country. In addition, the benchmark figure for construction outside of Manila, obtained from a survey in 1949 based on permit data, actually refers to only 28 cities and 5 suburban towns of Manila.[114] Thus, among other activities, own-account construction in agriculture is inadequately covered.[115] Partially counteracting the downward bias is the inclusion in the official total of the value of own-account construction of houses by their occupants which is counted as a separate industry in this study. If the value of the understatement is assumed equal to the value of commodity costs in this sector of private construction then ₱ 202.7 million can be used as the net value product. However, since the latter is probably greater than the former a figure of ₱ 165.0 million is used. This is taken to include ₱ 8.0 million of indirect taxes which would otherwise be assigned to the industry.[116]

Information from the May, 1956 Philippine Statistical Survey of Households permits an estimate of net value product for own-account construction of houses built by their occupants. In the Survey data were gathered on the costs of such house construction. Included in the data, in principle, are the value of materials produced by the builders or obtained free and the value of food, drink, etc. provided to friends and neighbors who helped.[117] These values are difficult to measure in practice; however if there is any tendency it is likely to be toward understatement. Indeed the costs in kind come to only 9.1% of the total costs reported.[118] Another source of understatement in the construction value is the absence of the profit that would be present if the same houses were commercially constructed. Finally, only new construction is included;

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[113]Trinidad, ...National Income Accounting..., p. 88.

[114]Compare Trinidad, ...National Income Accounting..., p. 88 with Bureau of the Census and Statistics, Journal of Philippine Statistics, XI (October-December, 1958), Tables 12 and 13.

[115]Officially, each year ₱ 10 million is added to the basic construction figure for own-account construction in agriculture, but this hardly seems an adequate allowance. (Trinidad, ...National Income Accounting..., p. 127.)

[116]See Appendix II-1.

[117]Letter to the writer from Perfecto R. Franche, Chief, Division of Surveys, Bureau of the Census and Statistics, Republic of the Philippines (January 27, 1959).

[118]PSSH Bulletin, Series 2, Table 26. There may be other errors in the Survey data (see Pillai, "Sample Surveys...," pp. 12-13 and PSSH Bulletin, Series 3, Employment and Labor Force, p. 1), but their direction, if they do exist, is uncertain.

alterations and major repairs are not.[119] To obtain the net value product, commodity costs have to be deducted, although it should be recognized that frequently the commodities used, e.g., nipa and bamboo, have not been fully counted elsewhere in production. In viewof all these factors taken together the published figure on the value of own-accounticonstruction is used for the net value product. That is, the understatement in the value of construction is assumed to about counteract the inclusion of commodityicosts. The published figure, ₱ 44.5 million,[120] is forithe first five months of 1956 only. Assuming the monthly average toibe about the same for the rest of the year the annual value comes to approximately ₱ 110.0 million,i and this amount is used as the net value product estimate.

VI. TRANSPORTATION AND OTHER UTILITIES[121]

The estimation of the net value product in transportation and other utilities departs from the official methodiby utilizing separate procedures for differenticomponents of the industry. Officially, the income originating in transportation and other utilitiesias a whole in 1948 is extrapolated by the income originating in agriculture, mining, construction, and government combined through 1951, and by the Central Bank Gross Sales Index for transportation and other utilities from 1951 through 1956.[122] Since the official method does not provide a breakdowniof transportation and other utilities, new estimates are made for each part of the industry, and the resulting total is used in place of the published one. The official net value product figure could have been allocated within the industry on the basis of the relative component estimates, but there is little ground for believing it to be superior to the total obtained here.i From the discussion in the section on construction it can be concluded that income originating in transportation and other utilities in 1948 is understated. Iniaddition, the increase of 47% in net value product between 1948 and 1956 indicated by the official

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[119]It should be mentioned thatiminor repair activity on own-account is counted in the net value product of dwelling services. This is customary procedure since the value of own-account minor repair work is presumably reflected in the value put on dwelling services (rent) for the year; major repairs, on the other hand, are considered capital outlays not to be chargediagainst current operations.

[120]PSSH Bulletin, Series 2, Table 26.

[121]This comprises the International Standard Industrial Classification categories, "Electricity, Gas, Water and Sanitary Services" and "Transport, Storage and Communications."i

[122]Trinidad, ...National Income Accounting..., pp. 59-64 and 89-91.

extrapolator[123] seems less than the increase reflected in the real product indicators.[124] Furthermore the national income per person employed, using the official figure, comes to about ₱ 1,150 which seems low.[125] The revised estimates for transportation and other utilities are shown in Table II-13.

TABLE II-13

NET VALUE PRODUCT IN TRANSPORTATION AND OTHER UTILITIES IN THE PHILIPPINES, 1956
(million pesos)

Industry	Net Value Product excluding Indirect Taxes (1)	Net Value Product including Indirect Taxes (2)
TRANSPORTATION AND OTHER UTILITIES	444.3	460.1
Transportation	354.4	368.8 (a
Railroad	15.8	15.8
Passenger	9.2	9.2
Freight	6.6	6.6
Road, motorized	194.4	194.4
TPU bus operators	130.0	130.0
TH truck operators	25.3	25.3
AC vehicle operators	26.2	26.2
Operators of taxicabs & other automobiles for hire	12.9	12.9
Road, non-motorized	4.0	4.0

[123] Trinidad, ...National Income Accounting..., p. 49.

[124] See Table I-1. There is no evidence of significant declines in the prices of these services between 1948 and 1956.

[125] The employment information is taken from PSSH Bulletin, Series 3, p. 10 and the official figure from Trinidad, ...National Income Accounting..., p. 49.

TABLE II-13
(continued)

Industry	Net Value Product excluding Indirect Taxes (1)	Net Value Product including Indirect Taxes (2)
Water	125.0	128.9
Internal shipping	72.5	76.4
Handling of internal cargo	22.5	22.5
Handling of overseas cargo	30.0	30.0
Air	15.2	15.2
Communications	24.1	24.3 (b
Telephone	8.9	8.9
Telegraph, government operated	4.8	4.8
Posts	10.4	10.4
Electric energy production and distribution	50.8	52.0
Transportation & other utilities, n.e.c.	15.0	15.0

SOURCES: Col. (1): Estimated by the writer.
(2): Col. (1) plus indirect taxes assallocated in Appendix II-1s

NOTES: (a Includes ₱510.5 million of unallocated indirect taxess
(b Includes ₱ 0.2 million of unallocated indirect taxes.

For rail transportation the net value product is derived from information on railroad operations in the annual reports of the two firms operating in the Philippines, the Manila Railroad Company and the Philippine Railway Company.[126] The former is by far the more important, accounting for well over 90% of the estimated net value product of both combined. The ratio of net to gross value product is assumed to be the same for passenger and freight transportation.

Motorized road transportation is broken down into four categories - TPU bus, TH truck, and AC vehicle operators, and operators of taxicabs and other automobiles for hire. TPU operations relate to busses legally supposed to operate according to fixed routes, schedules and rates. TH operations pertain to commercial trucking and AC operations mainly to jeepneys.

Table II-14 shows the derivation of the estimate for TPU bus operators based on data in a study by the Stanford Research Institute. First the gross value product and net value product are estimated for 21 companies from summaries of their reports to the Philippine Public Service Commissiond The ratio of net value product to gross value product for these companies is then applied to the gross value product for a larger group of 95 firms, and the result is divided by the number of vehicles in operation by these firms to get the net value product per vehicle. A total net value product figure is obtained by multiplying the calculated per-vehicle figure by the total number of TPU vehicles registered with the Bureau of Motor Vehicles. This total net value product figure is too large, however. The sample operators are larger than the average and it is likely that the net value product per vehicle is larger too. Also, the sample covers operations to and from Metropolitan Manila for the most part. In other areas, within Metropolitan Manila for example, a greater proportion of the vehicles are small. A partial offset is provided by the fact that reports to the Public Service Commission are likely to underreport revenues as compared to costs.[127] Because, on balance, there is an upward bias the net value product estimate is reduced from ₱d156.1 million to ₱d130.0 million.

A similar procedure is used for estimating the net value product of TH truck operators. The net value product - gross value product ratio is computed for 10 firms and applied to the gross value product of a slightly larger sample of 16 firms to obtain the figure for net value product per vehicle, which comes to ₱ 8,492. The result is again multiplied by the total number of vehicles

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[126]Manila Railroad Company, Annual Report for the Fiscal Year Ended June 30, 1956, p. 5, and ...for the Fiscal Year Ended June 30, 1957, pp. 17, 22 and 31-32. Information from the annual reports of the Philippine Railway Company appears in Stanford Research Institute, An Economic Analysis of Philippine Domestic Transportation, Vold V, Land Transportation: Railroads, Table A-XIV.

[127]See Stanford Research Institute, An Economic Analysis of Philippine Domestic Transportation, Vold IV, Land Transportation: Roads and Motor Vehicles, Tables G-II, G-V, G-VI, and G-X and pp. 92 and 119 for support of these comments.

registered[128] to obtain net value product for all firmss Again the sample consists of larger than average operators. However, in addition to the under-reporting to the Public Service Commission another offset arises from the fact that TH operators frequently register their vehicles as private trucks to minimize taxes and regulations Alsosthe number of vehicles for the 16 firms appears to refer to those authorized rather than those in operation and the former are believed to be greater in number than the latter.[129]

TABLE II-14

DERIVATION OF THE NET VALUE PRODUCT OF TPU BUS OPERATORS IN THE PHILIPPINES, 1956

(1)	Gross value product, 21 companies[a]	₱ 44.29 million
(2)	Net value product, 21 companies[a]	₱ 21.53 million
(3)	Net value product/gross value product[a]	0.4861
(4)	Gross value product, 95 companiess[a]	₱ 52.97 million
(5)	Net value product, 95 companiess[a]	₱ 25.75 million
(6)	Number of vehicles in service, 95 companiess[a]	3,925
(7)	Net value product per vehicle, 95 companiess[a]	₱ 6,561
(8)	Total number of TPU vehicles registered	23,785
(9)	Total net value product (unadjusted)	₱s156.1 million
(10)	Total net value product (adjusted)	₱ 130.0 million

SOURCES: (1): Stanford Research Institute, ...Motor Vehicles, Table G-VI and G-VIII.
(2): Ibid.
(3)s (2) ÷ (1)s
(4): Stanford Research Institute, ..sMotor Vehicles, Table G-V.
(5): (4) x (3).
(6): Stanford Research Institute, ...Motor Vehicles, Table G-V.
(7): (5) ÷ (6).

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[128]See Table III-10.

[129]See Stanford Research Institute, ...Motor Vehicles, Tables G-XIV, G-XVI and G-XVII and pp. 143 and 146 for support of these comments.

TABLE II-14
(continued)

SOURCES (cont.):

(8): Table III-10.
(9): (8) x (7).
(10): (9) corrected for estimated overstatement.

NOTES: a) 1955 data.

The estimates of net value product for AC vehicle operators and for operators of taxicabs and other automobiles for hire are more approximate than those for the rest of motorized road transportation. Guiding the estimates are assumptions (1) that the net value product per vehicle in each of these operations is somewhat less than the amount per vehicle for TPU bus operators and (2) that the net value product per unit for commercial automobile operators is slightly less than the amount for AC vehicle operators. The TPU bus figure comes to ₱ 5,466.[130] The net value product per unit for AC vehicle operators is therefore estimated to be ₱4,000 and that for commercial automobile operators to be ₱ 3,500. These figures are then multiplied by the number of vehicles registered[131] in each case to give the total net value product.

A similar kind of estimate is made for the net value product in non-motorized road transportation. The number of persons usually occupied in calesa, carretela, and carreton transportation declined from 29,000 in 1938 to 12,000 in 1948,[132] for which the rapid growth of motorized transportation was largely responsible. Given the continuing rapid growth of the latter between 1948 and 1956 it is likely that non-motorized road activity declined further between thedtwo years. The number of persons usually occupied in the industry in 1956 is therefore set at 5,000. It is assumed that the net value product per person is ₱ 800, making the total net value product ₱ 4.0 million.

Water transportation is divided into three parts - internal shipping, handling of internal cargo and handling of overseas cargo.[133] For each, income originating in sample operations is expanded to cover all operations.

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[130]Calculated from Table II-14.

[131]From Table III-10.

[132]See Table III-10.

[133]The Philippine overseas fleet is not important; its operations are included in transportation and other utilities, n.e.c.

In internal shipping, cost data for a "typical" FS-type vessel[134] provide the starting point for estimating net value producti FS-type vessels, which are small freighters, accounted for 8% of the registered gross tonnage of internal shipping in 1954 but 33% of the tonnage of the so-called "core" fleet, units running on regular interisland schedules and providing the basis of internal water traffic.[135] From the cost data the income originating is estimated for the vessel and reduced to a per-gross-ton basis. The resulti(₱ 206.4) is then multiplied by the total gross shipping tonnage registered (351,294 tons).[136] The inclusion of the fishing fleet and theivessels ofiprivate owners in the gross tonnage total exaggerates the net value product as does the fact that FS-type vessels are larger and probably used more intensively than most of the shipping. There are several offsetting factors. The income originating figure excludes, for lack of data, any estimate of profit. The gross tonnage total is for 1954 and it is believed that not all shipping is registered.[137]

A similar procedure is used to obtain the net value product accounted for by the handling of internal cargo. Stevedoring costs for the "typical" FS-type vessel are converted to a per-ton basis and multiplied by the registered tonnage. Most of the fishing fleet should not be included in the estimate of commercial handling. In addition some of the cargoes on private and commercial vessels are handled by the employees of the enterprises shipping or receiving the commodities. On the other hand, there is the fact that the total gross tonnage refers to 1954 and probably does reflect under-registrationi

The basic procedure used for estimating the net value product arising from the handling of overseas cargo involves multiplying sample stevedoring and pier gang costs per ton by total cargo tonnage. The unit costs, which amount to ₱ 3.43 for unloading and ₱ 3.87 for loading, are the averages for nine overseas voyages into Manila and nine out from Manila.[138] The unloading cost is multiplied by the total tonnage of cargo flowing into the Philippines from overseas (4.17 million tons).[139] and the loading cost by the total tonnage of cargo flowing to the rest of the world (7.05 million tons).[140]

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[134]The data are from Stanford Research Institute, An Economic Analysis of Philippine Domestic Transportation, Vol. III, Domestic Water Transportation and Ports, Table A-IX.

[135]Frederick Li Wernstedt, The Role and Importance of Philippine Interisland Shipping and Trade, pp. 19-20i

[136]Ibidi, p. 19.

[137]Stanford Research Institute, ...Water Transportation..., pp. 20-23i

[138]The data for each voyage appear in Ibid., Table B-XII.

[139]Bureau of the Census and Statistics, Foreign Trade...1956, p. 9.

[140]Ibid.

The sum of the results comes to ₱ 41.6 million, which seems high when compared to the net value product figures for other parts of transportation. Aside from the possibility of deficiencies in the sample the major source of error probably lies in the implicit assumption that all cargo involves commercial handling. Imports (e.g., crude petroleum) and especially exports (e.g., sugar, minerals, timber and lumber) are also handled by employees of the importing or exporting enterprises. The figure is therefore revised to ₱ 30.0 million.

For air transportation the net value product is derived by estimating the income originating in Philippine Air Lines.[141] P.d A. L. has a monopoly of domestically-chartered, scheduled air transport.

Estimates of income originating derived from annual reports also provide the net value product figures for the communications industries-telephone, government-operated telegraph and posts. Telephone communications cover all private commercial operations together with those of the government-operated Bureau of Telecommunications system.[142] Data from the Bureau of Telecommunications are also used for the net value product in government-operated telegraph communications,[143] and data from the Bureau of Posts are used for postal operations;[144] in both cases the calendar-year figures are averages of fiscal-year figures.

The net value product arising from the production and distribution of electric energy is obtained by multiplying the quantity produced[145] by an estimated unit price and deducting a rough allowance for the value of commodity

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[141]The basic data appear in Republic of the Philippines, Office of Economic Coordination, Annual Report for the Fiscal Year Ended June 30, 1956, Appendix C, and ...for the Fiscal Year Ended June 30, 1957, Appendix C and Appendix D, p. 31. The Office of Economic Coordination is the agency which administers the interests of the Philippine Government in various corporations.

[142]The data for the industry were obtained from Philippine Long Distance Telephone Company, Annual Report, 1957, unpaged, and Republic of the Philippines, Bureau of Telecommunications, Annual Report for the Period from July 1, 1955 to June 30, 1956, p. 86 and ...for the Period from July 1, 1956 to June 30, 1957, p. 64.

[143]Annual Report...1955 to...1956, p. 84 and ...1956 to..d1957, p. 62. Private telegraph operations, which are much less significant than those of the government, are included in transportation and other utilities, n.e.c.

[144]Republic of the Philippines, Bureau of Posts, Annual Report for the Fiscal Year Ended June 30, 1957, pp. 53-55, and a letter to the writer from Manuel J. Romero, Chief, Inspection and Investigation Division, Bureau of Posts (March 8, 1960).

[145]See Table III-10.

inputs used. The unit price is estimated on the basis of the calculated unit cost of electric energy purchased by large and medium manufacturing establishments which comes to ₱ 0.048 per kilowatt-hour.[146] Other purchasers probably paid more per kilowatt-hour on the average, but it is also necessary to recognize that the quantity figure doestnot allow for transmission leakages or for energy used within the industry. So, in determining the value of electric energy producedtand distributed a unit price of ₱ 0.050 is used. The cost of commodity inputs is assumed to be 10% of the gross value product.

There remain the activities in transportation and other utilities not elsewhere classifiedt[147] The net value product fortthese groups is assumed to be ₱ 15.0 million.

VII. SERVICES

For the estimatestof the net value product in services the official data are modified in several respects.t The modifications arise mainly out of a reorganization of the groupstwithin thetindustry and a different definition of the coverage of services. Officially, services are broken down into government, professional services provided in private practice, private education, personal servicestand recreation. The revised scheme utilizes the following groups: government, community services, businesstservices, recreation, and personal services. Government is defined more narrowly in this studytthan in the official estimates.t Public health and public education services are included in the community group and government enterprises are included intthe industries intwhich theyswould be classified if they were private enterprises;[148] among the enterprises excluded from government are the Bureaus of Posts and Telecommunications. Health and business services are defined more broadly in this study than intthe officialtestimatest The services provided by professionaltpersons in private practice and professional persons working for others are both covered.t The net value product data for services appear in Table II-15.

In principle an adjustment is also necessary because the official figures are defined to exclude capital consumption allowances. In practice

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[146] 1956 Annual Survey of Manufactures, Vol. 1, Series 2, p. 26. The quantity purchases was 19.6% of the total electric energy produced.

[147] Commercial warehousing, included with transportation and other utilities in the ISIC, is coveredtin production not elsewhere classified in the official estimates and in this study.

[148] Actually there is some double counting in the official figure. All public enterprises are included under government; however, the activities of a number of them are also measured elsewhere. (Trinidad, ...National Income Accounting.t., pp. 129-130.

however, little adjustment is needed for the exclusion; it is likely that capital consumption is seldom figured as an expense in determining net income in countries like the Philippines where business activity is not highly organized. Indeed, the entire value of a capital expenditure is often considered as an expense of the year in which the asset is acquired rather than being written off over a number of years. This practice is widespread among small operators in the TPU bus industry,[149] and there seems to be no reason to expect the case of services to be any different. But capital goods are not considered commodity inputs in the estimates for any of the other industries, since such goods are not transformed in the process of production but rather contribute their services to production over a period of time. However, since the service industries do in general require little capital the degree of understatement is probably small. Therefore, the net value product for services as a whole, before the inclusion of indirect taxes, is increased by just 5.0% to cover the capital consumption excluded from the net value product and the capital expenditures counted as current purchases. No attempt is made to distribute the correction within the industry, the assumption being that the distribution would not affect the relative weights signficantly.

TABLE II-15

NET VALUE PRODUCT IN SERVICES IN THE PHILIPPINES, 1956
(million pesos)

	Net Value Product excluding Indirect Taxes (1)	Net Value Product including Indirect Taxes (2)
SERVICES	1,476.3[a]	1,489.7[a]
Government services	418.6	418.6
Armed forces	115.3	115.3
Other government services	30353	303.3
Community services	425.7	426.1
Education	278.2	278.2
Private education	80.4	80.4
Elementary	9.1	9.1

[149]Stanford Research Institute, ...Motor Vehicles, p. 100.

TABLE II-15
(continued)

	Net Value Product excluding Indirect Taxes (1)	Net Value Product including Indirect Taxes (2)
Private education (cont.)		
Secondary	26.1	26.1
Collegiate	38.5	38.5
Special vocational	4.5	4.5
Private education, n.e.c.	2.2	2.2
Public education	197.8	197.8
Primary	114.6	114.6
Intermediate	55.2	55.2
Secondary	22.2	22.2
Collegiate	5.8	5.8
Health Services	135.1	135.5
Physicians	84.6	84.9
Dentists	21.2	21.3
Nurses	22.7	22.7
Midwives	6.6	6.6
Religious services	10.3	10.3
Community services, n.e.c.	2.1	2.1
Business services	174.8	175.3
Lawyers	86.4	86.7
Accountants	29.2	29.3
Engineers	50.4	50.5
Architects	5.0	5.0
Business services, n.e.c.	3.8	3.8

TABLE II-15
(continued)

	Net Value Product excluding Indirect Taxes (1)	Net Value Product including Indirect Taxes (2)
Recreation	28.5	37.4
Personal services	358.6	362.2[b]
Domestic services	190.1	190.1
Restaurants, bars & refreshment parlors	56.5	56.5
Hotels, lodging places & dormitories	9.6	9.6
Barbering	33.0	33.0
Beauty care	17.8	17.8
Photographic services	8.7	8.7
Funeral services	7.9	7.9
Laundry services	32.7	32.7
Personal services, n.e.c.	2.3	2.3

SOURCES: The section on services in this chapter and indirect taxes as allocated in Appendix II-1.

NOTES: a) Includes ₱ 70.1 million unallocated adjustment for capital consumption allowances and capital expenditures charged to current expense.
b) Includes ₱ 3.6 million of unallocated indirect taxes.

To measure the net value product of government the official total, which is derived from government records and refers to the compensation of public employees,[150] including income in kind,[151] is utilized after being adjusted for

[150] Trinidad, ...National Income Accounting..., pp. 91-93.

[151] Letter to the writer from Peregrino S. Reyes, Chief, National Income Branch, Office of Statistical Coordination and Standards, Republic of the Philippines (January 30, 1959).

the narrower definition of government. Also, the net value product is broken down into the armed forces (including the Philippine Constabulary) and other government services. The figure for the armed forces is the average of fiscal-year data on expenditures for personal services by the Department of National Defense.[152] To obtain the figure for other government services, ₱263.4 million is deducted from the official total, less the net value product of the armed forces, for government enterprises and public education.[153] The lack of data prevents the deduction of any other net value product measured elsewhere in the industry estimates, in health services for example, but the overstatement is not significant except for the inclusion of some of the net value product of government construction as that is defined in this study. But there are also two cases in which the government figures are understated. Because of the lack of data the net value product is restricted to the compensation of government employees including pay in kind; other income originating in government, i.e., rent and interest, is not included. In addition, it is doubtful that the income originating with local government is covered in its entirety. It should be mentioned that the net value product figure for other government services also is an average of data for fiscal 1955-56 and 1956-57.

Education, health services and religious services are the main community service industries. As mentioned previously, the first two include activities of both the private sector and the government.

The official figures on the net value product of private education, available by type of educational institution, i.e., elementary, secondary, etc., are used with one slight modification. The official figures are obtained by use of a sample survey of private educational institutions. Those cooperating in the survey are classified according to type of institution and size of income originating. The total number of each type is assumed to have the same income distribution as the cooperating sample.[154] The official data are for the 1955-56 school year;[155] since enrollment did increase between that year and the next the figures require slight revision. It is assumed that the net value product per student by type of institution is the same in both school years. In combining the two years, enrollment in 1956-57 is given 7/3 the weight of enrollment in 1955-56 since the school year begins in June and ends in March.[156]

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[152]The fiscal-year data are from a letter to the writer from Pedro M. Gimenez, Auditor-General, Republic of the Philippines (November 13, 1959).

[153]For the government enterprises figure see Trinidad, ...National Income Accounting..., p. 92, and for the public education figure Table II-15.

[154]Trinidad, ...National Income Accounting..., pp. 93-95 and 164.

[155]National income worksheets.

[156]For the sources of enrollment figures see Appendix III-2. The official net value product data by type of educational institution appear in Trinidad, ...National Income Accounting..., p. 94.

Information on income originating in public education is not readily available, so the figures are estimated in the following manner. Information on average monthly salaries for various types of professional personnel in elementary schools and on fringe benefits is used in conjunction with the number of professionals of each type to obtain the basic figures for income originating in primary and in intermediate public education. The basic figure is in each case adjusted for the pay of non-professional personnel by using data from the Census of Private Schools in 1948. The entire procedure is shown in Table II-16. The net value product in public secondary and collegiate education is then obtained by assuming that the ratio of (1) the net value product per student enrolled at each of these levels to (2) the net value product per student in elementary schools is the same for both private and public education.[157] As in the case of government services no estimate is made of the net value product aside from employee compensation, but the distortion is minor.

In estimating net value product accounted for by health services, use is made of the official income originating data for the private practice of physicians, dentists, nurses and midwives and for the activities of hospitals, maternities and clinics. The latter is included in personal services in the official estimates. Some modifications are necessary, however, because in this study health services cover more than private practice; they are defined to cover all the activities of physicians, dentists, nurses and midwives whether these persons are practicing privately or working for others. This definition leads to the double counting of net value product to the extent that the activities of professional persons working for employers outside of their professions are measured in the industries where they work. However, the errors in the relative weights of these other industries resulting from the inclusion of professional activities are small. Pharmacists and chemists, included in the professions in the official estimates, are entirely excluded from services in this study because even when practicing privately they are largely covered in manufacturing and commerce.

The official data on income originating in private professional practice were obtained from a sample survey of professional persons. The percentage of each type (i.e., physicians, nurses, etc.) responding who were engaged in private practice and the average net income from such practice are assumed applicable to all practitioners in the group.[158]

The net value product from health services provided outside of private practice is measured by the number of each type of professional so employed multiplied by an estimated average income. To obtain the former, the official figure on the number of each type of professional with no private practice is

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[157] Data on public school enrollment are from letters to the writer from Vitaliano Bernardino, Acting Director of Public Schools, Republic of the Philippines (August 11, 1959), and Vincente Bobis, Assistant Registrar, University of the Philippines (August 25, 1959). For private school enrollment see Table III-12.

[158] Trinidad, ...National Income Accounting..., pp. 95-99.

TABLE II-16

DERIVATION OF THE NET VALUE PRODUCT OF PUBLIC ELEMENTARY EDUCATION IN THE PHILIPPINES, 1956

Personnel Category	Number 1956 Calendar Year (a (1)	Average Yearly Salary (pesos) (b (2)	Average Annual Pay including Supplements (pesos) (3)	Total Annual Pay including Supplements (million pesos) (4)	Total Income Originating (million pesos) (5)
Primary classroom teacher	61,481	1,416	1,543	94.87	
Traveling demonstration teachers & matrons	2	1,600	1,744	-	
Teacher nurses	288	1,580	1,722	0.50	114.64
Division supervisors	266	2,504(c	2,704	0.72	
District supervisors & supervising principals	465	2,170	2,365	1.10	
Elementary school principals	1,347	1,932	2,106	2.84	
Supervisors of training departments & critic teachers	71	2,209(d	2,408	0.17	
TOTAL, PRIMARY	63,920	n.e.	n.e.	100.20	114.64
Intermediate classroom teachers	28,913	1,450	1,581	45.71	
Traveling demonstration teachers & matrons	2	1,600	1,744	-	
Teacher nurses	137	1,580	1,722	0.24	
Division supervisors	126	2,504(c	2,704	0.34	

TABLE II-16
(continued)

Personnel Category	Number, 1956 Calendar Year (a (1)	Average Yearly Salary (pesos) (b (2)	Average Annual Pay including Supplements (pesos) (3)	Total Annual Pay including Supplements (million pesos) (4)	Total Income Originating (million pesos) (5)
District supervisors & supervising principals	220	2,170	2,365	0.52	) 55.21
Elementary school principals	651	1,932	2,106	1.37	)
Supervisors of training departments & critic teachers	33	2,209(d	2,408	0.08	)
TOTAL, INTERMEDIATE	30,032	n.e.	n.e.	48.26	55.21

SOURCES: Col. (1): Weighted average of 1955-56 and 1956-57 school-year data, with the latter having 7/3 the weight of the former. The original figures were obtained from Bernardino, letter (August 11, 1959).

Col. (2): The figures in the table are ten times the average monthly salary reported in Bernardino; it is assumed that the pay for more than ten months is offset by the difference between ten months and that received for a shorter period by temporary personnel.

Col. (3): Col. (2) x 1.09, except for division supervisors where Col. (2) is multiplied by 1.08. The Philippine Government contributes life insurance and retirement premiums roughly equal to 9% of annual salaries of ₱ 2,400 or less and 8% of salaries over ₱ 2,400 (Jose V. Abueva, "Personnel Administration: Selection, Classification and Employee Benefits," in Edwin O. Stene et. al., Public Administration in the Philippines, pp. 136-137). The benefits are provided for regular employees only. To the extent that the school personnel were temporary the figures are overstated.

Col. (4): Col. (1) x Col. (3).

TABLE II-16
(continued)

SOURCES (cont.)

Col. (5): Col. (4) x 1.14. Col. (5) differs from Col. (4) in that the former includes an estimate of the pay of non-professional personnel. The figure, 1.14, is the ratio of total wages and salariesoto the pay of professional personnel ascreported by private schools in the Census of 1948 (...1948...Economic Census..., p. 323).

NOTES: a) Personnel aside from teachers are allocated by the writer to primary and intermediate according to the number of teachers at each of the two levels.
b) Data refer to the 1955-56 school yearo
c) Simple average of the salaries for various types of supervisors.
d) Simple average of the salaries for critic teachers and for supervisors of training departments.

combined with a rough estimate for the number engaged in private practice and working for someone else at the same time. In the official net value product estimates the average sample income from the private practice of each profession is stratified into two size-classes. For the purposes of this study, the lower of these figures is assumed to be approximately equal to the average income earned from working for others, except with dentists, nurses and midwives where the higher of the two figures is deemed the closer approximation.

To complete the net value product in health services two minor additions are made to the total for each type. One is for the portion of the net value product accounted for by non-professional personnel occupied in providing health services. This portion is roughly estimated, basically by assuming the probable number of non-professional personnel and their average incomes. The other adjustment is the allocation of the net value product accounted for by hospitals, maternities and clinics. First, an estimate of the income paid to professional medical personnel is deducted from the total for this groupd The deduction is fixed at 50% of the net value product on the basis of data from the 1948 Census of Private Hospitals.[159] Then the result is allocated among the various health services in proportion to their net value product. The entire procedure for health services is shown in Table II-17.

Business services - i.e., those provided by lawyers, accountants, engineers and architects - have the same type of coverage as health services and the net value product is estimated in the same manner. The data for business services are also shown in Table II-17. An additional ₱ 3.8 million of net value product for various business services, not elsewhere classified, is included with the net value product in Table II-15. These are included with personal services in the official data.

In using the official income data on engineers, marine engineers, who account for a large portion of the total number, are excluded since they are largely covered in transportation, even when in private practice. The total number of marine engineers in 1956 is estimated by using internal shipping movements to extrapolate the number reported in the 1948 Census.[160] It is assumed that 10% of the total were engaged in private practice and that their average income was the same as for all other engineers similarly engaged. It is probable that the activities of other engineers especially, and also of lawyers, accountants and architects, in "private practice" also are at least partly measured in other industries but the effect on the relative weights is insignificant.

For recreation the official net value product figure is used. It is obtained by extrapolating income originating in recreation in 1948, with the extrapolator being the income originating in agriculture, mining, construction

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[159] ...1948...Economic Census...d, p. 328. The total net value product was obtained from the national income worksheets.

[160] For the 1948 figure see Census...1948...Population, pp. 486-667 passim and for the extrapolator Table III-10.

TABLE II-17

DERIVATION OF THE NET VALUE PRODUCT OF HEALTH SERVICES AND BUSINESS SERVICES IN THE PHILIPPINES, 1956

Industry	Income Originating in Private Practice (million pesos) (1)	Total Number in the Profession (2)	Number with No Private Practice (3)	Percent of Total Number Practicing both Privately and in Someone Else's Employ (4)	Number Practicing both Privately and in Someone Else's Employ (5)
HEALTH SERVICES	79.33				
Physicians	52.74	8,419	2,273	20.0	1,684
Dentists	10.46	5,239	1,572	5.0	262
Nurses	10.55	7,789	3,505	5.0	389
Midwives	5.58	3,960	---	10.0	396
BUSINESS SERVICES	118.62				
Lawyers	55.24	14,754	4,574	10.0	1,475
Accountants	20.78	3,313	596	15.0	497
Engineers	38.38[a]	7,247[b]	1,392[c]	5.0	362
Architects	4.22	853	119	5.0	43

TABLE II-17
(continued)

Industry	Average Income from Working for Others (pesos) (6)	Total Income from Working for Others (million pesos) (7)	Income Earned by Non-professional Employees of Private Practitioners (million pesos) (8)	Allocation of Net Value Product of Hospitals, Maternities and Clinics (million pesos) (9)	Total Net Value Product (million pesos) (10)
HEALTH SERVICES		47.06	3.20	5.46	135.05
Physicians	6,447	26.41	2.00	3.42	84.57
Dentists	4,849	8.89	1.00	0.86	21.21
Nurses	2,833	11.03	0.20	0.92	22.70
Midwives	1,846	0.73	-	0.27	6.58
BUSINESS SERVICES		41.28	11.10		171.00
Lawyers	4,323	26.15	5.00		86.39
Accountants	5,851	6.40	2.00		29.18
Engineers	4,704	8.25	3.75		50.38
Architects	2,955	0.48	0.35		5.05

TABLE II-17
(continued)

SOURCES: Col. (1)-(3): Trinidad, ...National Income Accounting..., pp. 97-98.
(4): Estimated by the writer.
(5): Col. (2) x Col. (4).
(6): Data in Trinidad, ...National Income Accounting..., pp. 97-98, as interpreted by the writer.
(7): [Col. (3) + Col. (5)] x Col. (6).
(8): Estimated by the writer.
(9): Total estimated by the writer and allocated in the proportions of [Colo (7) + Col. (8)].
(10): Col. (1) + Col. (7) + Col. (8) + Col. (9).

NOTES: a) Excludes ₱ 1.37 million estimated as the net value product from the private practice of marine engineers.
b) Excludes 2,081 marine engineers as estimated by the writer.
c) Excludes 1,873 marine engineers as estimated by the writer.

and government combined through 1951 and the Central Bank Gross Sales Index for recreation from 1951 through 1956.[161]

Aside from the case of domestic services the figures on net value product for personal services are the official estimates for 1955,[162] allowing for some changes in classification. A sample survey of income originating in the provision of various kinds of personal services provided the basis for the estimates.[163] The official figures for 1956 are obtained by using the Gross Sales Index for personal services to extrapolate the 1955 data "on the feeling that the procedure followed in 1955 would not give any better figure than one obtained by extrapolation."[164] Concern over the reliability of the 1955 figures arises mainly from the extremely small number of cooperating establishments providing the sample data.[165] The cooperating establishments amounted to less than 2% of the total number and to an even smaller percentage in the case of particular services.

While there are strong grounds for mistrusting the reliability of the 1955 benchmark data the results shown by extrapolation may be even less reliable. Between 1955 and 1956 the Gross Sales Index for personal services increased by 25.6% and there is evidence that the 1956 figures are substantially overstated. Assuming a 50% increase in the number of persons usually occupied in the various personal services between 1948 and 1956 (which must be considered a liberal assumption) the income originating per person in each of the services in 1956 comes to more than ₱ 2,000 which seems quite high.[166] For this reason the 1955 figures, while not perfect, are used in preference to those for 1956.

For domestic services the official 1956 figure is used. It is derived as follows. The number of domestic servants as reported in the 1948 Census of Population is assumed to have increased at the same rate as total population between 1948 and 1955. The number resulting in 1955 is multiplied by the average income originating in 1948 (including an allowance for income in kind) adjusted for price changes.[167] Again the 1955 value is extrapolated to 1956 by the Gross Sales Index for personal services. However, in this case the 1956 result compares favorably with an estimate based on other information. Using data from the Philippine Statistical Survey of Households on the employment of domestic servants and average weekly cash earnings, and allowing for income in kind, a result approximately equal to the official figure is obtained.[168]

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[161] Trinidad, ...National Income Accounting..., pp. 59-64 and 89-91.

[162] From the national income worksheets.

[163] Trinidad, ...National Income Accounting..., pp. 99-100.

[164] Ibid., p. 100.

[165] Letter to the writer from Ruben F. Trinidad, (July 29, 1959).

[166] The number usually occupied in each of the personal services during 1948 can be found in Census...1948...Population, pp. 624-639 passim.

[167] Trinidad, ...National Income Accounting..., pp. 62-63 and Trinidad, letter (July 29, 1959).

[168] See PSSH Bulletin, Series 3, Tables 10 and 28-31 for the data.

The coverage of the remaining personal services is more narrow in this study than in the official estimates. Religious services and hospitals, maternities and clinics are included in community services. Several other personal services, with a total net value product of only $ 5.9 million however, are in community and business services. A few industries (e.g., motor vehicle overhaul and drydocking and ship repair), with a total net value product of $ 10.9 million, are excluded entirely on the ground that they are covered elsewhere than in services.[169]

The net value product estimates for personal services aside from domestic service and for business and community services aside from public education have several biases in common.

A tendency toward understatement exists because of the under-reporting of income, especially income in kind. As the discussion in the construction section of this chapter showed, income was understated in the 1948 Population Census which was conducted by personal enumeration; this kind of bias is even more likely to exist when the data are gathered from mail survey as was the case here. The estimates for recreation and domestic service, which are based on extrapolations of 1948 data, of course suffer from the same type of bias; but in the case of domestic services, at least, there seems to be an offsetting error in the extrapolator since the 1956 figure is reasonably accurate.

In addition many of the services are limited in coverage. Professional personnel, as defined in the official estimates and here, are limited to those passing government examinations.[170] In numerous personal services undercoverage is highly probable, because often the producers of these services operate only sporadically and temporarily.

Acting to offset the downward biases in the various community, business and personal services, however, is the strong probability that the sample establishments which cooperated by returning the mail questionnaires were mostly large ones. The possibility of other biases in the samples (e.g., as regards the number of professional persons with independent practice) exists also, but the direction of the errors, if they are present, is uncertain. Final factors that should be considered in evaluating the net value product in services is the approximate character of the adjustments made in the case of health and business services and the new estimates made for public education.

VIII. COMMERCE

The official net value product in commerce is used as the basis for the figure in this study. It is obtained from extrapolating the income

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[169]The detailed data for all of these personal services were obtained from the national income worksheets.

[170]Trinidad, ...National Income Accounting..., p. 95.

originating in 1948 by the income originating in agriculture, mining, construction and government combined through 1951 and by the Gross Sales Index for commerce from 1951 through 1956.[171] The benchmark figure suffers from the under-declaration of money income, the under-coverage of income in kind, and other of the deficiencies previously described in the evaluation of the official net value product in construction. An additional source of understatement arises from the manner in which capital items are reported in the income figures, as was explained in the introduction to services. The extrapolator shows an increase of 34.0% between 1948 and 1956,[172] and there is reason to believe this to be an understatement too. The real product in agriculture and manufacturing, the industries most responsible for commercial activity, showed increases of 80%, or a little more, and over 140% between 1948 and 1956.[173] Opposing these large increases were slight declines in prices,[174] and a decline in the value of imports of consumer and capital finished goods that was considerable[175] but not comparable to the expansion in agriculture and manufacturing.

In addition to the understatement of the basic net value product figure for 1956 in and of itself, the downward bias is accentuated slightly when indirect taxes are added. To the official figure of ₱ 959.0 million, ₱ 362.1 million of indirect taxes (largely import duties, sales taxes and excise taxes on imported commodities) are added, making a total of ₱ 1,321.1 million. Taxes on all imported commodities, including those obtained directly from abroad without a commercial intermediary, are assigned to commerce. But direct-importing net value product, aside from indirect taxes, is likely to be counted in the industries under which the importers are classified, and presumably any indirect taxes should be included there also. No data are available to permit this kind of allocation, however. Since the bulk of direct-importing net value product does consist of indirect taxes it is more useful to consider the net value product of commerce understated to the extent of the non-tax portion than to consider the other industries understated to the extent of the tax portion.

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[171] Ibid., pp. 59-64 and 89-91.

[172] Ibid., p. 90.

[173] Table I-1.

[174] Bureau of the Census and Statistics, Journal of Philippine Statistics, XII (January-March, 1959), Table 23, and Central Bank, Statistical Bulletin, VIII (December, 1956), Tables 111, 112, and 114.

[175] The published data show a decline of 13.4% in the total value of imports (Central Bank, Statistical Bulletin, IX (December, 1957), Table 55). It is likely that the import value for consumer and capital finished goods, which comprise the bulk of commercial activity in imported commodities, fell by more than the total. Furthermore, the decline in the total is itself understated because of the overvaluation of imports in 1956 due to the exchange controls which were then in effect. Another factor deserving mention is that much of the large amount of war surplus property disposed of in the Philippines by the United States in 1947 (International Monetary Fund, Balance of Payments Yearbook, Vol. III (1949-50), p. 341) probably involved commercial activity in 1948.

Because the non-tax portion is small the overstatement for the other industries as a result of its inclusion there and the understatement for commerce are slight. Another slight downward bias is given to commerce by the incomplete coverage of local government taxes which probably fall more heavily on commerce than on other industries.

Unfortunately data are not available to correct the understatement inithe net value product of commerce and it remains the least reliable of the weights. As will be seen the commerce indicator is also crudei Even so, the total effect on aggregate real product is notisignificant. On the other hand, the possibility of analyzing changes in the real product of commerce is limited.

IX. DWELLING SERVICES[176]

The method by which the net value product of dwelling services is estimated differs from the official one. Officially, the number of dwellings in 1956 is obtained by using total population to extrapolate the number of dwellings in 1948. The result is multiplied by the unit rental estimated for 1948 to arrive at the total value of dwelling services in 1956.[177] More recently available information indicates that the value is too large. According to the Philippine Statistical Survey of Households, expenditures on shelter in the Philippines amountedito ₱ 534 million during the year beginning March 1, 1956[178] as compared to the ₱ 585 million official figure for gross value product. Both figures include imputed expenditures on the rent of dwellings occupied by their owners.

The procedure employed in this study utilizes, in the main, information from the Philippine Statistical Survey of Households onithe number of dwellings by type of construction materials[179] and the total household expenditure on shelter. Table II-18 shows the detailed estimation of net value

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[176]For literary convenience the term "dwelling" is used to denote a household dwelling unit, although the two are not actually identical. The latter is defined as the living quarters of a household and, thus, in reality it is possible for more than one household to occupy the same dwelling.

[177]Trinidad, ...National Income Accounting..., pp. 63 and 100-101.

[178]Calculated from Candido Ordinario, "Income Distribution and Expenditure Patterns among Families in the Philippines," Statistical Reporter, III (October, 1959), Tables 3-5.

[179]For comparability with other years the data are adjusted slightly, from the Survey period at the end of May to mid year. Total population is used as the extrapolator.

product. The total expenditure of ₱ 534 million is used as a control in determining the rental value for dwellings by type of construction. The average unit rental for each type of dwelling in 1956 is then determined by assuming that the average unit rentals for the various types of dwellings bore the same relationship to each other in 1956 as they bore to each other in 1948.

TABLE II-18

DERIVATION OF THE NET VALUE PRODUCT OF DWELLING SERVICES IN THE PHILIPPINES, 1956

		Type of Construction Materials			
		Strong	Mixed	Light	Others
(1)	Number of dwellings in Manila, 1948 (thousands)	31.97	40.55	28.39	70.73[a]
(2)	Estimated average rental per year (pesos)	1,200	660	420	60
(3)	Total rental value in Manila (million pesos)	38.36	26.76	11.92	4.24
(4)	Number of dwellings outside of Manila, 1948 (thousands)	93.67	618.23	1,982.68	634.91[a]
(5)	Estimated average rental per year (pesos)	360	240	120	60
(6)	Total rental value outside of Manila (million pesos)	33.72	148.37	237.92	38.09
(7)	Total rental value in the Philippines, 1948 (million pesos)	72.08	175.13	249.84	42.33
(8)	Average unit rental in the Philippines, 1948 (pesos)	573.7	265.8	124.2	60.00
(9)	Ratio of average unit rental of each type of dwelling to average unit rental of dwellings constructed of "other" materials	9.56	4.43	2.07	1.00
(10)	Number of dwellings in the Philippines, 1956 (thousands)	443	1,075	2,196	93[a]
(11)	Average unit rental in the Philippines, 1956 (pesos)	374.0	173.0	81.1	39.2

TABLE II-18
(continued)

	Type of Construction Materials			
	Strong	Mixed	Light	Others
(12) Total rental value in the Philippines, 1956 (million pesos)	165.8	185.8	178.8	3.6
(13) Net value product of dwelling services, 1956 (million pesos)	152.5	170.9	164.4	3.3

SOURCES: (1): Census...1948...Population, p. 2253.
(2): Tito A. Mijares, National Income by Industrial Origin, pp. 8-9. These estimates were originally made by William I. Abraham.
(3): (2) x (1).
(4): Census...1948..iPopulation, p. 2253.
(5): Mijares, National Income..., pp. 8-9.
(6): (5) x (4).
(7): (6) + (3).
(8): $\frac{(7)}{(1) + (4)}$.
(9): Calculated from (8).
(10): Calculated from PSSH Bulletin, Series 2, Table 22, and extrapolated to a mid-year basis by total population. (The population data are from Edith Adams, "New Population Estimates for the Philippines, 1948-62," typewritten copy of a paper presented at the June 28, 1958 meeting of the Philippine Statistical Associationiand published in Philippine Statistician, VII (September, 1958) 134-166.)
(11): Derived from the following formula in which R = average unit rental in 1956 of dwellings constructed of "other" materials, andifor which the ₱ 534 million figure is from Ordinario, "...Expenditure Patterns...in the Philippines,i" Tables 3-5, and the other figures from (9) and (10):
(443 x 9.56R) + (1,075 x 4.43R) + (2,196 x 2.07R) + (93 x 1.00R) = ₱ 534.0 million.
(12): (11) x (10)i
(13): (12) x 0.92, the latter figure estimated by the writer.

NOTES: a) Includes dwellings for which the type of construction material was not reported.

Officially, no deduction is made for commodity costs. The cost items usually considered for dwelling services are insurance expense, minor repairs, and taxes. The first is unimportant in the Philippines but because of the light construction of most Philippine dwellings and the prevalence of typhoons, etc. household repairs are often necessary. In many instances, however, the repairs are probably done by the household members using inputs not counted as output elsewhere in the estimates. Total reported real estate taxes for 1956 amounted to ₱ 50.8 million and it is not likely that more than 20% of this should be assigned to dwelling services.[180] So, figuring about ₱ 10.0 million for taxes and allowing also for minor repair costs not counted elsewhere, a deduction of 8.0% is made from the total rental value to arrive at the net value product. The 8.0% of course comes out to be approximately equal to the average rental for a month.

Since the industry as measured in this study (and in the official estimates) covers both non-rented and rented dwellings it may be argued that double counting exists. That is, rents received may be included in the net value product for other industries. However, the maximum possible amount of double counting is not large and the actual amount is likely to be much less than the maximum. As mentioned in Chapter I, only about 6% of the households rented their dwellings in 1956, although rents paid were undoubtedly more than 6% of the total value. Many of these households were in Manila where rents are higher for each type of dwelling and where more of the dwellings are of the heavier types of construction materials. But the amounts paid are counted elsewhere only when the net value product is obtained from income data, and only if there was full reporting of income. And, as has been mentioned several times in this chapter, under-reporting is likely to have been the case.

The estimates of net value product by type of dwelling are admittedly approximate because of the assumption that relative average unit rents were the same in 1956 as in 1948 and of the fact that the 1948 rents themselves were rough estimates. This is aside from possible errors in the Survey of Household data.[181] The only evidence available for evaluating the estimates indicates that the average unit rental for light dwellings in 1956 (₱ 81.1) may be too high. In that year, 53.5% of the owner-occupied houses (most of which were presumably of light materials) were valued under ₱ 250 and the average cost of owner-occupied houses built by households was at least ₱ 311.[182] The value of the houses does seem low relative to the cost of construction, and it is

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[180] The ₱ 50.8 million is a simple average of fiscal-year data from Trinidad, ...National Income Accounting..., p. 108.

[181] See Pillai, "Sample Surveys...," pp. 12-13, and PSSH Bulletin, Series 3, p. 1. The use of the expenditure figure for the year beginning March 1, 1956 to cover calendar 1956 is not likely to involve a significant error.

[182] PSSH Bulletin, Series 2, Tables 21 and 26. The latter figure refers to the first five months of 1956 and includes costs in kind; it also represents an understatement (see the section on construction earlier in this chapter).

possible that neither figure is accurate enough to compare with the rental figure. But what is probably the main reason for any inaccuracy, especially as regards the value of houses, would also apply to the rental figure - the difficulty in obtaining representative prices where exchange activity is not commoni

X. PRODUCTION NOT INCLUDED ELSEWHERE

The official estimate of theinet value product accounted for by production not included elsewhere (₱ill5.0 million[183]) is used after ₱ 5.9 millioniin indirect taxes[184] are added. The estimate is obtained from the extrapolation of income originating in 1948 by the income originating in agriculture, mining, construction and government combined through 1951 and by the Central Bank Gross Sales Index as a whole from 1951 through 1956.[185] In 1948 this classification listed persons usually occupied in industries not included elsewhere and persons with a gainful occupation but for whom no industry was recorded.[186] Several of the industries covered in the first category in 1948 (e.g., motor vehicle, machinery, and other kinds of repair) and probably some of the activity reflected in the second category are included elsewhere in 1956. On the other hand, the income originating in 1948 is understated. Nothing is known about the accuracy of the extrapolator.

XI. CONCLUSION

It is apparent from the preceding sections of this chapter that, while the official net value product data provide the basis for the weights used in this study, substantial revisions have been made where possible in order to eliminate known biases in the official figures. Often the revisions are rough, but at worst the results are no more deficient than the official estimates and frequently they represent significant improvements. Some errors of known direction which could not be corrected with impunity still remain in the revised weights. But, with the one exception of the understatement in theinet value product of commerce, these are not believed significant.

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[183] Trinidad, ...National Income Accounting..., p. 101.

[184] See Appendix II-1.

[185] Trinidad, ...National Income Accounting..., pp. 59-64 and 101.

[186] Census...1948...Population, pp. 694-705.

APPENDIX II-1

ALLOCATION OF INDIRECT TAXES

BY INDUSTRY

Indirect taxes can be defined as those which are included in the prices of goods and services. The most important types in the Philippines are import, excise and sales taxes. In the official data on net value product indirect taxes are not covered in the estimate for each industry but are added to the total for all industries. In this study each tax is included as part of the net value product of the industry or industries in which the effective price paid for output first reflects the tax.

The official data on indirect taxes from the General Auditing Office are not available in sufficient detail to permit industry allocationsi The Bureau of Internal Revenue does have the necessary information in many cases; this together with dataifrom the Bureau of Customs and the Motor Vehicles Office and some of the General Auditing Office figures enables reasonably accurate estimates of indirect taxes by industry to be prepared.

For the purpose of valuing the production of a given year it is desirable to have taxes on an accrual rather than a cash basis; i.e., the taxes attributable to the production of a given year rather than the taxes paid in that year should be counted. The official figures are on a cash basis[187] and to a large extent the data here are also. Included in the official data are the collections of the excise tax on foreign exchange which expired at the end of 1955. These receipts, amounting to an estimatedi₱ 29.2 million in calendar 1956,[188] along with a few million pesos of other collections clearly arising from production before 1956 are not included in the figures here, however.

Officially, the profits or losses of enterprises suchias the Bureaus of Posts and Telecommunications are counted as indirect taxes or subsidies (which can be considered negative indirect taxes). But these profits or losses are not considered at all in this appendix because they are reflected in the estimates of net value product,ibefore the addition of indirect taxes, of the industries in which the enterprises are found. Payments to gold mine operators are the only form of direct subsidy to producers in the Philippines. In the official data these payments are incorrectly subtracted from the indirect tax total; they are not in the official net value product for gold mining in the first place. The subtraction is unnecessary in this study also.

Table II-19 shows how indirect taxes are allocated. It will be recalled that the net value product results to which these taxes are added are exclusive of any indirect taxes that may have been included originally. This is to avoid double counting since the Bureau of Internal Revenue reports and the other sources provide all the necessary tax data.

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[187] Trinidad, ...National Income Accounting..., p. 44.

[188] The collections for fiscal 1955-56 wereiP 58.3 million and for 1956-57 zero (Gimenez, letter (November 13, 1959)); the figure used for official net value product purposes is a simple average of the two.

TABLE II-19

ALLOCATION OF INDIRECT TAXES IN THE PHILIPPINES FOR 1956 BY INDUSTRY

Type of Tax	Value[a] (million pesos)	Source of Data	Industry to Which the Tax Is Allocated	Method of Allocation
Excise taxes	224.4	(1)		
Imported commodities	52.4		Commerce	Assigned directly
Domestic commodities	172.0			
	9.1		Manufacturing: distilled, rectified & blended liquors	Assigned directly
	12.8		Mfg.: fermented beverages	Assigned directly
	113.3		Mfg.: cigarettes	Assigned directly
	0.3		Mfg.: cigarettes	Allocated roughly
	0.3		Mfg.: cigars	Assigned directly
	0.1		Mfg.: cigars	Allocated roughly
	33.3		Mfg.: products of petroleum & coal	Assigned directly
	2.4		Mfg.: not included elsewhere	Assigned directly
	0.4		Services: recreation	Assigned directly

TABLE II-19
(continued)

Type of Tax	Value[a] (million pesos)	Source of Data	Industry to which the Tax Is Allocated	Method of Allocation
License, business & occupation taxes	62.2	(1)		
	2.3		Mining	Assigned directly and not broken down
	0.4		Manufacturing	Allocated roughly and not broken down further
	1.4		Mfg.: milled rice products	Assigned directly
	0.7		Mfg.: milled corn products	Assigned directly
	5.6		Mfg.: centrifugal sugar mill & sugar refinery plant products	Assigned directly
	0.5		Mfg.: desiccated coconut	Assigned directly
	0.1		Mfg.: distilled, rectified & blended liquors	Assigned directly
	1.4		Mfg.: soft drinks & carbonated water	Assigned directly
	0.1		Mfg.: cigarettes	Allocated roughly
	0.1		Mfg.: cigars	Allocated roughly
	0.6		Mfg.: vegetable oils	Assigned directly

TABLE II-19
(continued)

Type of Tax	Value[a] (million pesos)	Source of Data	Industry to Which the Tax Is Allocated	Method of Allocation
License, business & occupation taxes (cont'd)				
	0.1		Mfg.: medicinal & pharmaceutical preparations	Assigned directly
	0.2		Mfg.: not included elsewhere	Assigned directly
	6.7		Construction: other private construction	Allocated roughly
	10.5		Transportation & other utilities: transportation	Assigned directly and not broken down
	0.2		Transportation & other utilities: communications	Allocated roughly and not broken down further
	1.2		Transportation & other utilities: electric energy production & distribution	Allocated roughly
	0.3		Services: physicians	Assigned directly
	0.1		Services: dentists	Assigned directly
	0.3		Services: lawyers	Assigned directly
	0.1		Services: accountants	Assigned directly

TABLE II-19
(continued)

Type of Tax	Value[a] (million pesos)	Source of Data	Industry to Which the Tax Is Allocated	Method of Allocation
License, business & occupation taxes (contd)				
	0.1		Services: engineers	Assigned directly
	8.5		Services: recreation	Assigned directly
	3.6		Services: personal services	Allocated roughly and not broken down further
	16.4		Commerce	Assigned directly
	0.7		Commerce	Allocated roughly
Sales taxes	111.1	(1)		
Section 184	2.4			
	1.0		Manufacturing: motor vehicles, except combat vehicles and motorcycles	Allocated roughly
	1.4		Manufacturing: not included elsewhere	Allocated roughly
Section 185	0.7			
	0.1		Manufacturing: textile products of cotton & rayon fabrics	Allocated roughly
	0.6		Manufacturing: not included elsewhere	Allocated roughly

TABLE II-19
(continued)

Type of Tax	Value[a] (million pesos)	Source of Data	Industry to Which the Tax Is Allocated	Method of Allocation
Sales taxes (cont'd)				
Section 186	21.3			
	1.5		Agriculture, forestry & fishing	Allocated roughly and not broken down further
	5.5		Manufacturing	Allocated roughly and not broken down further
	14.3		Commerce	Allocated roughly and not broken down further
Collected by Customs	74.6		Commerce	Assigned directly
Compensating tax	12.1		Commerce	Assigned directly
Customs duties	191.6			
Import duties	182.4[b,(c	(2)	Commerce	Assigned directly
Other customs duties	9.2[b,(c,(d	(2),(3)	Commerce	Assigned directly
Indirect taxes, n.e.c.	92.7			
	73.7	(1),(3),(4)	Aggregate net value product	Assigned directly and not broken down

TABLE II-19
(continued)

Type of Tax	Value[a] (million pesos)	Source of Data	Industry to Which the Tax Is Allocated	Method of Allocation
Indirect taxes, n.e.c. (cont'd)				
	1.1	(4)	Agriculture, forestry & fishing: livestock raising	Assigned directly and not broken down
	2.9	(1)	Agriculture, etc.: export timber	Allocated roughly
	1.8	(1)	Agriculture, etc.: domestic timber	Allocated roughly
	0.3	(1)	Agriculture, etc.: forestry, n.e.c.	Assigned directly
	1.5	(4)	Agriculture, etc.: fishing	Assigned directly and not broken down
	0.2	(1)	Mining	Assigned directly and not broken down
	0.1	(1)	Manufacturing cigarettes	Assigned directly
	1.3	(4)	Construction: other private construction	Assigned directly
	3.0	(4)	Transportation & other utilities: internal shipping	Allocated roughly
	0.9[b]	(2)	Transportation & other utilities: internal shipping	Assigned directly

TABLE II-19
(continued)

Type of Tax	Value[a] (million pesos)	Source of Data	Industry to Which the Tax Is Allocated	Method of Allocation
Indirect taxes, n.e.c. (cont'd)				
	5.9	(4)	Production not included elsewhere	Allocated roughly

SOURCES: (1): Republic of the Philippines, Bureau of Internal Revenue, Annual Report for the Fiscal Year Ended June 30, 1956, pp. 4-13 and Annual Report...June 30, 1957, pp. 10-19.
(2): Central Bank, Statistical Bulletin, IX (December, 1957), Table 68.
(3): Estimated by the writer from Bureau of the Census and Statistics, Journal of Philippine Statistics, XI (April-June, 1958), Table 20.
(4)5 Trinidad, ...National Income Accounting..., p. 108.

NOTES: a) Simple average of data for the 1955-56 and 1956-57 fiscal years.
b) Calendar-year data.
c) Includes a few million pesos of tax revenues attributable to the production of prior years, which kinds of taxes are excluded from the other data in the Table.
d) Excludes an estimate of wharfage dues paid to the Bureau of Customs and covered in indirect taxes, not elsewhere classified.

The taxes are allocated as follows. For 79.4% of the total, information is sufficiently detailed so that the assignment of the taxes to the proper industries creates no problem. As an example, data are available on manufacturers' excise taxes by commodity. For the remaining 20.6% for which specific information is limited, two different procedures are followed. In some cases, especially when the major portion of a tax is associated with a few industries, the tax is roughly divided in as fine detail as possible - but not always in as much detail as the groups to which it is assigned. For example, one class of sales tax is allocated to agriculture, manufacturing and commerce but no further. This means, in effect, that such a tax is assumed to be distributed among the component industries of the groups to which it is allocated in proportion to their net value product. Any error resulting from the assumption is minor since the amounts assigned in this manner are small as compared to the net value product to which they are added. In other cases, a tax is assigned entirely to one group under the same assumption and with the same degree of impunity. Real estate taxes and a few minor taxes are added to aggregate net value product without being assigned to a specific industry at all, but they amount to less than 1% of the aggregate before their addition.

For all taxes but customs duties (which are direct calendar-year data) the figures in Table II-19 are simple averages of the data for the 1955-56 and 1956-57 fiscal years. The use of calendar-year information for customs duties is especially desirable because of the 17% import tax that went into effect at the beginning of 1956. The use of fiscal-year averages for the other taxes may distort the weights to some extent. Indirect taxes are most significant for alcoholic beverage, tobacco and petroleum products manufacturing, recreation and commerce.

The indirect tax total in this study, ₱ 682.0 million, differs only slightly from the official one of ₱ 688.1 million;[189] this remains the case even when differences in timing and concept are allowed for. There is one respect in which indirect taxes are understated both officially and here, and that is the under-coverage of local government revenues. Apparently only real estate taxes are included in the official data,[190] and the same is true of this study as no other information on local government revenues is available. However, the omission does not lead to serious error in the relative weights as the total of these other taxes is small.

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[189] Trinidad, ...National Income Accounting..., p. 108.

[190] This conclusion results from the comparison of the official figures with data on the national government only from G. Jimenez, letter (November 13, 1959).

CHAPTER III

INDICATOR DATA

I. INDICATOR SPECIFICATIONS

This chapter is devoted to the data to be used for indicating the real product of each Philippine industry in 1938 and 1948 as compared to 1956. As was mentioned in ChapteriI, ideally real product should be measured by using double indicators for each and every good and service produced but practical considerations dictate the adoption of single indicators, sometimes having imperfect coverage, in this study. The most important types of single indicators used here are output, labor input, stock of capital, and raw material input. The basic data have been obtained from numerous sources -- statistical publications of the Philippine Government and the United Nations, annual reports of Philippine government agencies and private business firms, personal correspondence, etc. These sources are listed in Appendix III-1 and arranged by industry in Appendix III-2.

II. AGRICULTURE, FORESTRY AND FISHING

Most of agriculture, forestry and fishing is covered by output indicators. The data for the industry appear in Table III-1.

The sources used for crop production are mainly the Crop and Livestock Surveys and the Censuses. The Census figures are used in preference to other data obtained less scientifically on an annual basis. Prior to the first Crop and Livestock Survey in 1954, including the period before World War II, crop production data were based largely on unsystematic estimates by agricultural extension workers or other government personnel who often had no statistical training.[1] The figures on palay production for the late 1930's provide one illustration of the weakness of the non-Census data. When the average of the figures for 1937-38 and 1938-39 are compared with an average

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[1]United States, Economic Survey Mission to the Philippines, Report on Agriculture, Forestry and Fishing, pp. 5 and 9, and Robert T. McMillan, "Problems on Agricultural Statistics," Philippine Statistician, I (December, 1952) 52.

TABLE III-1

INDICATORS OF THE REAL PRODUCT IN AGRICULTURE, FORESTRY AND FISHING IN THE PHILIPPINES, 1938, 1948 AND 1956

Industry	Net Value Product, 1956	Indicators 1938	1948	1956	Specifications
AGRICULTURE, FORESTRY AND FISHING	2,598.4				
Crops	1,508.2	a)	b)	c)	d)
Palay	590.4	1,826.0	1,902.0	3,310.0	T. Tons- palay production
Corn	130.0	452.6	649.4	910.4	T. Tons- shelled corn production
Copra	242.9	504.4	720.7	1,229.6	T. Tons- copra production
Coconuts not used for copra	26.4	295.3	334.0	381.5	M. nuts gathered
Sugarcane	76.2	7,947.0	3,267.0	9,208.0	T. Tons- sugarcane used for centrifugal sugar, muscovado & panocha
Abaca	41.3	144.13	97.67	124.40	T. Tons- abaca production
Tobacco	42.0				
Native	6.8	32.12	18.49	19.35	T. Tons- native tobacco production
Virginia	35.2	---	---	25.28	T. Tons- Virginia tobacco production

TABLE III-1
(continued)

Industry	Net Value Product, 1956	Indicators 1938	1948	1956	Specifications
Fruits & nuts not included above	138.6				
Banana	33.1	(e 147.2	(e 227.4	311.2	T. Tons- banana production
Jackfruit	19.6	(f 30.19	(f 41.12	69.68	T. Tons- jackfruit production
Lanzon	9.7	9.878	(g 15.055	18.752	T. Tons- lanzon production
Mango	25.5	(h 36.31	(h 38.81	52.74	T. Tons- mango production
Orange	5.1	(i 3.932	(i 5.874	6.579	T. Tons- orange production
Papaya	5.3	(j 54.62	(j 39.24	33.00	T. Tons- papaya production
Pomelo	7.2	(k 9.158	(k 8.791	18.56	T. Tons- pomelo production
Pineapple	22.1	(l 28.06	(l 19.14	107.8	T. Tons- pineapple production
Fruits & nuts, n.e.c.	11.0	(measured by the indicator for the rest of "Fruits & nuts not included above")			
Root crops	117.6				
Camote	70.0	406.9	388.0	818.3	T. Tons- camote production
Cassava	21.3	169.3	180.3	295.0	T. Tons- cassava production
Gabi	10.1	23.10	29.10	101.5	T. Tons- gabi production

TABLE III-1
(continued)

Industry	Net Value Product, 1956	Indicators 1938	1948	1956	Specifications
Root crops (cont'd)					
Onion	4.5	2.777	2.725	10.05	T. Tons- onion production
Irish potato	4.6	0.1882	0.6817	8.850	T. Tons- Irish potato production
Ubi	5.1	10.55	13.38	38.42	T. Tons- ubi production
Root crops, n.e.c.	2.0	(measured by the indicator for the rest of Root crops)			
Vegetables not included above	75.2				
Cabbage	6.9	2.669	2.432	17.61	T. Tons- cabbage production
Dry beans	11.2	3.111	1.075	14.06	T. Tons- dry bean production
Eggplant	13.8	12.35 (m	15.10	67.08	T. Tons- eggplant production
Garlic	5.0	0.1027	0.4476	2.430	T. Tons- garlic production
Mongo	16.7	7.009	4.741	28.30	T. Tons- mongo production
Tomato	17.2	13.59	9.178	59.14	T. Tons- tomato production
Vegetables, n.e.c.	4.4	(measured by the indicator for the rest of "Vegetables, not included above")			
Coffee	10.1	1.969	3.939	7.700	T. Tons- coffee production
Cacao	4.3	0.5490	1.447	1.562	T. Tons- cacao production

TABLE III-1
(continued)

Industry	Net Value Product, 1956	Indicators 1938	1948	1956	Specifications
Peanuts, unshelled	7.0	6.529	6.695	18.05	T. Tons- unshelled peanut production
Crops, n.e.c.	6.2	(measured by the indicator for the rest of Crops)			
Livestock raising & its products	574.5				
Livestock raising	322.7				
Carabaos	65.1	358.5	278.9	536.4	T. animals- change in population, March 1 of year stated-March 1 of following year plus number of deaths for the same period
Cattle	46.6	479.9	211.0	371.6	Ditto
Hogs	113.1	2,748.4	2,489.2	5,328.7	Ditto
Chickens	86.1	25,592.0	27,340.0	67,934.0	Ditto
Ducks	5.1	705.6	987.1	3,312.4	Ditto
Livestock raising, n.e.c.	(n 5.6	(measured by the indicator for the rest of Livestock raising)			
Products of livestock raising	251.8				
Milk	16.2				
Carabaos	11.1	2,867.9	2,228.9	4,280.5	T. population- March 1
Cattle	5.1	1,327.3	576.2	1,015.4	Ditto

TABLE III-1
(continued)

Industry	Net Value Product, 1956	Indicators 1938	1948	1956	Specifications
Products of livestock raising (cont'd)					
Eggs	235.6				
Chickens	210.0	24,221.0	24,146.0	65,230.0	T. population- March 1
Ducks	25.6	638.9	826.2	3,416.0	Ditto
Livestock slaughtering	60.5				
Carabaos	15.4	297.5	89.72	548.9	T. deaths- March 1 of year stated-March 1 of following year
Cattleo	11.2	453.7	165.4	345.8	Ditto
Hogs	27.7	2,590.3	2,109.0	4,936.0	Ditto
Chickens	4.8	24,221.0	24,153.0	65,230.0	Ditto
Livestock slaughtering, n.e.c.	1.4	(measured by the indicator for the rest of Livestock slaughtering)			
Forestry	150.0				
Export timber	88.3	105.0	14.4	881.7	M. board feet- timber exports
Domestic timber	56.0	909.8	910.1	1,037.2	M. board feet- timber production minus exports

TABLE III-1
(continued)

Industry	Net Value Product, 1956	Indicators 1938	1948	1956	Specifications
Forestry (contód)					
Forestry, n.e.c.	5.7	(measured by the indicator for the rest of Forestry)			
Fishing	303.7				
Commercial fishing	39.6	(o 19.7	42.0	106.7	T. Tons- catch in commercial fishing
Fishponds	44.8	(o 21.3	26.3	54.5	T. Tons- catch from fishponds
Municipally licensed & sustenance fishing	212.8o	200	240	300	T. Tons- catch in municipally licensed & sustenance fishing
Fishing, n.e.c.	5.0	(measured by the indicator for the rest of Fishing)			

SOURCES: Tables II-1 and II-3 throughoII-7 and the discussion of Forestry and Fishing in Chapter II for the netovalue product in 1956; Appendixes III-1 and III-2ofor the indicators.

NOTES:
a) Some of the data may not be for the calendar year, and for sugarcane the figure is the average of 1937-38 and 1938-39 crop-year data.
b) 1947-48 crop-year data.
c) Simple average of data for the 1955-56 and 1956-57 crop years.
d) Farm production, except for sugarcane.
e) Converted from the number of bunches at 3.5 kilograms per bunch.

TABLE III-1
(continued)

NOTES (cont'd):

f) Converted from the number of fruits at 2.0 kilograms per fruit.
g) Listed as number of fruits in the original source but believed to be kilograms.
h) Converted from the number of fruits at 0.2 kilogram per fruit.
i) Converted from the number of fruits at 40 kilograms per 225 fruits.
j) Converted from the number of fruits at 1.0 kilogram per fruit.
k) Converted from the number of fruits at 0.5 kilogram per fruit.
l) Converted from the number of fruits at 1.35 kilograms per fruit.
m) Converted from the number of fruits (sic) at 0.1 kilogram per fruit.
n) Includes ₱ 0.2 million net value product from the production of goats' milk.
o) 1939 figure.

of the Crop and Livestock Survey data for 1955-56 and 1956-57 the result indicates that per capita consumption was unchanged, which seems unlikely in view of postwar developments. Also, the prewar data show palay production and yields at high levels compared to the earlier 1930's even though there were drought conditions during the latter part of the decade.[2] It should be mentioned that the non-Census figures for palay andother agricultural commodities have been used in a number of basic statistical publications, including those of the Central Bank of the Philippines and the Food and Agricultural Organization of the United Nations, andas supporting material for much secondary economic analysis. But the Census figures are believed superior even though, as will be seen, they are not entirely perfect.

The data from the 1939 and 1948 Censuses refer in general to calendar 1938 and the 1947-48 crop year respectively and the Crop and Livestock Survey figures for 1955-56 and 1956-57 have been averaged for the figures of calendar 1956. In all three sources only farm output is included.

In two cases alternative sources are utilized. Only partial information on the output of non-copra coconuts is given in the 1948 Census; the number of nuts used for desiccated coconut (the most important use besides copra) has to be estimated. This is done by employing desiccated coconut exports to extrapolate the number of units so used in 1956.[3]

There are no comparable direct figures on the production of sugarcane for any two of the years. It is therefore assumed that in all three years 7.9 tons of cane were requiredfor each ton of centrifugal sugar produced and 12.0 tons of cane for each ton of muscovado and panocha. These ratios will be recalled from the discussion of the net value product from cane production in 1956. The cane figure for 1948 is derived from sugar production for the 1947-48 crop year only in order to maintain comparability with the other crops.

There are a few respects in which the indicator data may be deficient. Both Censuses mention (using practically identical language) the difficulty of obtaining accurate information from farmers because of lack of records and

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[2]The prewar data can be found in Republic of the Philippines, Department of Agriculture and Natural Resources, Agricultural Economics Division, Philippine Agricultural Statistics, Vol. 1, p. 26. In this source the production data for 1937-38 are stated as having been taken from the Census but the figures do not jibe with those in the Census publication.

[3]The number of nuts used for desiccated coconut in 1955-56 and 1956-57 was obtained from Maulit, letter (February 11, 1960), exports in 1956 from Bureau of the Census and Statistics, Foreign Trade...1956, p.315, and exports in 1947 and 1948 from Central Bank, Annual Report, 1949, pp. 42-43. Exports for calendar 1947 and 1948 are averaged to approximate the 1947-48 crop year figure.

faulty memory, especially when harvests occur more than once a year[4] (which is true of many Philippine crops) and the Crop and Livestock Survey, also utilizing the interview method, suffers from the same limitations.[5] In the 1939 Census the area cultivated in several provinces was definitely understated by farmers;[6] whether this was also true of production is not stated. In the 1948 Census complete enumeration was not possible in some areas because of civil disorders. If the population figures are any example production in these areas was probably over-estimated.[7] A quite definite source of understatement arising from the use of the 1948 Census is that the data are for the 1947-48 crop year. Since the post-war recovery in crops was not complete by then the figures for the 1948 calendar year would, in most cases, be larger than those shown. Copra, abaca and possibly some of the fruits and nuts are exceptions. Export information for the 1947-49 calendar years indicates that the output of copra and abaca declined between the 1947-48 and 1948-49 crop years. The output of several fruits and nuts was quite high in the 1947-48 crop year as compared to 1938 and this may very well have been due to more intensive harvesting in the face of food shortages, which were less severe in the 1948-49 crop year. The 1939 data are specified as referring mostly to calendar 1938 but for palay, at least, the crop not completely harvested at the time of enumeration (the beginning of 1939) was included.[8] Which other crops were similarly counted is not specified. A slight error probably arises from comparing calendar 1938 data with an average of 1955-56 and 1956-57 crop-year figures, but the direction is uncertain.

The indicators for fruits and nuts especially and also for root crops and vegetables are less reliable than the rest of the indicators. The production of many of these crops is widely scattered in small amounts, making accurate measurement difficult. In addition, for most of the fruits and nuts and for eggplant, Census data reported as the number of fruits, etc. had to be converted to a weight measure in order to be comparable with the 1956 data which are reported in tons. Since each fruit, etc. may vary in weight the conversion factors are only approximate.[9] This affects the comparisons

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[4] Census...1939...Population and Agriculture, pp. 897-898 and Census... 1948...Agriculture, p. 2332.

[5] Pillai, "Sample Surveys...," p. 11. This is aside from other possible deficiencies in the Survey data (see Pillai and the other sources mentioned in the discussion of the Survey in Chapter II.)

[6] Census...1939...Agriculture and Population, p. 898.

[7] The belief that population in these areas was probably over-estimated is expressed in a letter to the writer from Miss Edith Adams, United Nations, Bureau of Social Affairs, Population Branch (July 27, 1959).

[8] Census...1939...Population and Agriculture, p. 1167.

[9] Most of the conversion factors were obtained from Agricultural Economics Division, Philippine Agricultural Statistics, Vol. 1, pp. 270-275. Where a range of weight is given for a particular fruit, nut or vegetable, the average is used as the conversion factor.

between 1956 and the other years especially, and the comparisons between 1938 and 1948 as well since the original measures in the two years (e.g., the number of fruits) are also not strictly comparable.

The indicators covering livestock raising and its products and livestock slaughtering are approximate and interrelated. The data from which they are derived are shown in Table III-2. For convenience the indicator for the products of livestock raising is discussed first.

To cover the products of livestock raising the opening populations of the various types of animals are used. To improve the comparability of the data the populations are counted as of March 1, 1938, 1948 and 1956. The Censuses give the livestock populations for January 1, 1939 and October 1, 1948. To obtain the March 1st figures the annual rates of growth between the Census dates and March 1, 1956 are used. Since the cattle population declined between 1939 and 1956 the growth rate in the prewar period is estimated by applying the ratio of the cattle rate to the carabao rate in the postwar period to the carabao rate between 1939 and 1956.

To cover the raising of each kind of livestock the sum of the change in population and the number which died is used, and to cover slaughtering the latter alone. The closing populations for 1938 and 1948 (actually as of March 1, 1939 and 1949) are estimated again using the annual rates of growth between the Census dates and March 1, 1956. The number of poultry which died is assumed equal in all three years to the opening population plus imports. For livestock aside from poultry the number which died in 1956 is assumed to be 5% greater than the number slaughtered. In other years the number which died is calculated from the formula, number of deaths= opening population+ births+ imports- closing population.[10] The number of births in 1956 is calculated using this formula and then the rate of births as compared to the opening population is applied to the populations of March 1, 1938 and 1948 to derive the number of births and thus the number of deaths during these years.

In Chapter II mention was made that the livestock population figures for March 1, 1956 from the Crop and Livestock Survey may not be entirely accurate. An additional source of possible error is the approximate character of the estimates of non-farm population, the assumption being that farm and non-farm population changed at the same rates between 1948 and 1956. However, it is probable that if errors do exist in the 1956 figures they are minor. The rates of population growth between 1938 and 1956 do not seem unreasonable. The rates of population growth between 1948 and 1956 are quite high. While inaccuracies in the 1956 (or 1948) figures are a possible explanation, it is quite probable that the rates actually were high as the result of efforts to replenish the population after wartime depletions.

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[10] Imports are for the calendar years. Exports and re-exports were negligible in the three years. Separate information is notigiven for imports of carabaos and cattle; so estimates are made on the basis of the geographical origin of the combined imports. These comments also hold for poultry.

TABLE III-2

BASIC DATA FOR THE INDICATORS OF REAL PRODUCT FOR LIVESTOCK RAISING AND ITS PRODUCTS AND LIVESTOCK SLAUGHTERING IN THE PHILIPPINES, 1938, 1948 AND 1956
(thousand animals)

	Carabaos	Cattle	Hogs	Chickens	Ducks
(1) Population, 3/1/57	4,26820	1,04122	8,568.5	67,93327	3,31223
(2) Population, 3/1/56	4,280.5	1,015.4	8,175.7	65,230.2	3,41621
(3) Number of deaths, 3/1/56-3/1/57	548.9	345.8	4,935.9	65,230.2	3,416.2
(4) Imports, 1956	1.3	4.7	---	---	0.1
(5) Number of births, 3/1/56-3/1/57	535.1	367.1	5,328.7	n.e.	n.e.
(6) Number of births per thousand population on 3/1/56	125.0	361.5	651.8	n.e.	n.e.
(7) Population, 10/1/48	2,339.3	602.8	4,054.8	26,006.0	919.5
(8) Annual rate of growth, 10/1/48-3/1/56	8.49%	7.91%	9.92%	13.20%	19.36%
(9) Population, 3/1/49	2,418.1	621.8	4,213.0	27,333.0	986.2
(10) Population, 3/1/48	2,228.9	576.2	3,832.8	24,146.0	826.2
(11) Number of births, 3/1/48-3/1/49	278.6	208.3	2,489.1	n.e.	n.e.
(12) Imports, 1948	0.3	2.7	0.1	6.9	0.9
(13) Number of deaths, 3/1/48-3/1/49	89.7	165.4	2,109.0	24,152.9	827.1
(14) Population, 1/1/39	2,918.7	1,349.3	4,348.5	25,365.0	690.9
(15) Annual rate of growth, 1/1/39-3/1/56	2.13%	(a 1.98%	3.75%	5.66%	9.76%

TABLE III-2
(continued)

	Carabaos	Cattle	Hogs	Chickens	Ducks
(16) Population, 3/1/39	2,928.9	1,353.5	4,375.0	25,592.0	701.3
(17) Population, 3/1/38	2,867.9	1,327.3	4,216.9	24,221.0	638.9
(18) Number of births, 3/1/38-3/1/39	358.5	479.8	2,748.4	n.e.	n.e.
(19) Imports, 1938	--	0.1	--	0.2	4.3
(20) Number of deaths, 3/1/38-3/1/39	297.5	453.7	2,590.3	24,221.2	643.2

SOURCES: (1)-(3): Tables II-3 and II-4. For livestock aside from poultry (3) equals Line (9) in Table II-4 x 1.05; for poultry (3) is assumed to equal (2) + (4) from this table.
(4): Estimated from Bureau of the Census and Statistics, Foreign Trade...1956, p. 44.

(5): [(1) + (3)] - [(2) + (4)].

(6): $\frac{(5)}{(2)}$ x 1000.0, except for carabaos where an assumed rate is used.

(7): Census...1948...Agriculture, p. 2606.
(8): Calculated from (7) and (2).
(9) and (10): (7) adjusted by (8).
(11): [(10) x (6)] ÷ 1000.0.
(12): Estimated from Bureau of the Census and Statistics, Foreign Trade Statistics of the Philippines, 1948 and 1949, p. 1.
(13): [(10) + (11) + (12)] - (9), except for poultry which is assumed to equal (10) + (12).
(14): Census...1939...Population and Agriculture, p. 1101.
(15): Calculated from (14) and (2).
(16) and (17): (14) adjusted by (15).
(18): $\frac{(17) \times (6)}{1000.0}$.

TABLE III-2
(continued)

SOURCES (cont'd):

(19): Estimated from Commonwealth of the Philippines, Bureau of Customs, Annual Report for the Fiscal Year Ended December 31, 1938, pp. 126-127.

(20): [(17) + (18) + (19)] - (16), except for poultry which is assumed to equal (17) + (19).

NOTES: a) This figure does not show the computed average rate of change between 1938 and 1956 which was negative. Rather it is an estimate of the rate of change between March 1, 1938 and 1939. The estimate is arrived at by applying the ratio of the rate of growth in cattle to the rate of growth in carabaos in the postwar period to the rate of growth in carabaos between 1939 and 1956.

The high rates of population growth between 1948 and 1956 do raise some questions about the reliability of the indicators in 1948 however. The birth rates applied to the 1948ipopulation figures are calculated in 1956 using rather lower growth rates than existed in 1948; unless death rates were high in 1956 as compared to 1948 the calculated birth rates are too low for 1948. Or, putting it another way, in order for the same birth rates toibe accurate for 1948 and 1956, given the higher growth rates in 1948, the death rates in 1948 would have to be lower than in 1956. Therefore, to the extent that death rates were not actually lower in 1948 the estimated number of births and calculated number of deaths in 1948 are too low. It appears from the data that this is especially true for carabaos. It is probable that attempts to replenish the livestock population after wartime losses did lead to relatively less slaughtering in 1948 but it is doubtful if the rapid growth in population was solely due to lower death rates. Indeed less slaughtering is one factor causing higher birth rates. The conclusion, then, is that for livestock aside from poultry the indicators for slaughtering and raising are understated in 1948, at least as far as the application of 1956 birth rates is concerned. In estimating poultry slaughter, a constant death rate is assumed. To the extent there was less slaughter in 1948 to permit replenishment, the indicators for poultry raising and slaughter are overstated in that year.

Another factor affecting the accuracy of the indicators for all livestock is the extent to which the actual growth rates in 1938 and 1948 diverged from those obtained by extrapolation. Given the attempt to replenish the livestock population after the war it is probable that the growth rates for 1948 were higher than the average for the whole period. In that case, the number of calculated deaths in 1948 for livestock aside from poultry is overstated for two reasons - in addition to the understatement of the change in population, the March 1 population and thus the estimated number of births is overstated. The overstatement of deathsicontributes an upward bias to the indicators for livestock slaughtering and raising in 1948. However, since the rate of population growth is understated, there is an offsetting factor in the case of livestock raising. A somewhat similar situation exists for poultry in 1948i Because the opening population in 1948 is overstated thei indicators for slaughtering and therefore raising are overstated; however, the downward bias in the growth rate, resulting from the overstatement of the opening population, acts to offset the error in poultry raising. Overstatement in the opening population also creates an upward bias in the indicators for the products of livestock raising; on the other hand, if less of the opening population was slaughtered in 1948 more products were available.

While the use of 1956 birth rates for livestock aside from poultry, constant death rates for poultry, and average rates of growth for all livestock does lead to some bias in the 1948 figures this is less likely to be so for the prewar data. If there are any errors in the 1938 figures,i[11] there direction is uncertain.

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[11]In this connection the approximate estimate of the rate of growth in the cattle population between 1938 and 1956 should also be recalledi

Aside from the propriety of using average growth rates and the same birth rates or the same death rates for all three years there is the question of the accuracy of the figures on population change and deaths in 1956. Inaccuracies may arise from the Crop and Livestock Survey data, the non-farm estimates and the adjustments for non-slaughter deaths. Any errors affect the births and birth rates calculated for livestock, aside from poultry and carabaos, and thus the number of deaths in 1938 and 1948. However, it should be noted that an error in the number of deaths for 1956[12] is also reflected in the death figures for 1938 and 1948 so that the comparability of the data for raising and slaughtering is not seriously impaired. An error in the change in population in 1956 will also distort the death figures for the other years. However, the comparability of the indicators for livestock raising in 1956 relative to the other years will be less affected than the comparability of the indicators for livestock slaughtering since the error in the death figures for the other years will be in the same direction as the error in population change in 1956. As a result of the different procedure used for carabaos, any error in the change in carabao population will be offset by an opposite error in the number of deaths in 1956 so that the accuracy of the figure on carabao raising for that year is not impaired. The slaughter indicator will be inaccurate as compared to the other years, however. In the case of poultry an error in the population change in 1956 of course means an error only in livestock raising for that year.

Considering the various factors affecting the indicators for livestock raising and its products and for livestock slaughtering errors of known direction probably exist as follows. The indicators for poultry raising and slaughtering are overstated in 1948, with the degree of overstatement being greater for the latter, and the indicators for other livestock raising and slaughtering and for all livestock products are understated, with the degree of understatement being greater for other livestock raising.[13] In determining the errors it is assumed that in 1948 the distortion due to the use of constant death rates for poultry and 1956 birth rates for livestock aside from poultry outweighs the distortion from applying average rates of growth.

Indicator data are readily available for domestic and export timber, except for the latter in 1938. For that year separate information on timber and lumber exports does not exist. However, it is known that Japan was the most important market for timber and the United States the most important market

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[12]It will be remembered from Chapter II that the figure on cattle slaughter was particularly suspect, with the suspected error being in an upward direction.

[13]If the number of cattle deaths is over-estimated in 1956, then the understatement for cattle raising in 1948 relative to 1956 is accentuated, because in the former year the number of deaths was less important relative to the change in population. Similarly, the figures for cattle raising in 1948 and 1956 are both understated relative to the one for 1938 because of the greater relative importance of deaths in 1938.

for lumber.[14] So estimates of timber and lumber exports are made based on an examination of the geographical pattern of trade.[15] The comparability of the data on timber production for all three years may be affected by the understatement of output resulting from the use of data based on the collection of forest charges.

The indicators for fishing are largely approximations. As was stated in Chapter II, fishpond output and the municipal and sustenance catch are understated in the official figures for 1956. On the assumption that pond yields in 1956 averaged 500 kilograms per hectare instead of 350 kilograms, the official figure, the estimate of pond output is increased from 38.5 thousand tons to 54.5 thousand.[16] The municipal and sustenance catch is raised from 248.5 thousand tons to 300.0 thousand tons. The latter figure is a rough one selected on the basis of consistency with the other figures for 1956 and comparability with the data for the earlier years. It will be recalled that the official 1956 figure for commercial fishing is also an approximate one and this is true of the other years as well. In this case the official figures are used as is, however.

For municipal and sustenance fishing in 1948 the official catch of 130.0 thousand tons is raised to 240.0 thousand tons. The former was calculated by doubling the combined fishpond and commercial catch. It is deemed to be understated more than the 1956 figure because the reported increase in the municipal and sustenance catch between 1948 and 1956 implies almost a doubling of per capita consumption and there is no evidence of that sharp a rise having actually occurred. For the estimate of fishpond output in 1948 the pond yield is assumed to have been 400 kilograms per hectare instead of 350 kilograms, making the total catch 26.3 thousand tons instead of 23.0 thousand.

Prewar information on commercial and fishpond operations is not available for 1938; so 1939 figures are used. The 1938 municipal and sustenance catch is estimated at 200.0 thousand tons on the assumption that production from this source increased more rapidly between 1948 and 1956 than between 1938 and 1948 as the commercial and fishpond catch did.

When taken together with net imports the production data indicate per capita fish consumption of about 16 kilograms in 1938, 18 kilograms in 1948 and 22 kilograms in 1956, figures which do not seem unreasonable when compared with each other.[17]

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[14] Andres V. Castillo, Philippine Economics, p. 281.

[15] Bureau of Customs, Annual Report...1938, pp. 335-336. Japan and the United States took 74.5% of the total export quantity. In making the estimates, the data are converted from cubic meters to board feet at 423.55 board feet per cubic meter.

[16] The official quantity figures for both 1956 and 1948 can be found in Bureau of the Census and Statistics, Journal of Philippine Statistics, XII (January-March, 1959), Table 81.

[17] Net imports for 1938 are from Bureau of Customs, Annual Report...

III. MINING AND QUARRYING

Output indicators are used for most of mining and quarryingd The production figures are basically those of the Philippine Bureau of Mines, although they are actually taken from secondary sources where, in the case of metals, output is expressed in terms of the metallic content of the ores mined as contrasted to ore weight. Output expressed in the former terms provides a more accurate measure of real product than output expressed as ore weight because of variations in recovery. However, except for gold, the figures relate to estimated rather than actual recovery. The indicator data for mining and quarrying appear in Table III-3.

IV. MANUFACTURING

Output and raw material input indicators cover most of manufacturing; labor input indicators are as numerous as the output type but cover less than one third as much in terms of net value product. The manufacturing indicator data are shown in Table III-4.

Centrifugal sugar mill and sugar refinery plant products, muscovado and panocha, alcoholic beverages, tobacco products, sawmill and planing mill products, vegetable oils and cement are covered by output indicators.[18] The sugar data represent simple averages of successive crop-year figures, but this is not likely to have a significant effect on calendar year comparisons. Most sugar is milled at the turn of the calendar year and there is no reasons to expect a drastic change in the proportion milled in one year as compared to the next. Coconut oil production, the indicator for vegetable oils, is in 1948 also an average crop-year output; the change from 1947-48 to 1948-49 was slight, however.

Raw material input is measured by production plus imports minus exports (including re-exports). This kind of indicator is used for milled rice products, milled corn products, bakery products, cotton yarn, cotton and rayon fabrics, and products made largely of coconut oil (i.e., vegetable lard and margarine and soap and other washing and cleaning compounds).

For milled rice products and milled corn products the production of palay and shelled corn are used.[19] The percentage of palay milled is much

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1938, pp. 170-180, 312-313 and 340; for 1948 from Bureau of the Census and Statistics, Foreign Trade...1948 and 1949, pp. 7-10, 160 and 199; and for 1956 from Bureau of the Census and Statistics, Foreign Trade...1956, pp. 51-54 and 311-312. For the population figures see the discussion of personal services later in this chapter.

[18]The indicators for desiccated coconut (exports) and motor vehicle repair (the number of cars registered) are related to the output type.

[19]Net imports of palay and shelled corn were negligible.

TABLE III-3

INDICATORS OF THE REAL PRODUCT IN MINING AND QUARRYING IN THE PHILIPPINES, 1938, 1948 AND 1956

Industry	Net Value Product, 1956	Indicators 1938	1948	1956	Specifications
MINING AND QUARRYING	139.5				
Gold	36.4	902.1	209.2	406.2	Gold content of ores mined- t. fine ounces
Copper	38.6	4.4	2.0	27.0	Est. copper content of ores mined- t. tons
Chromite	22.8	33.1	88.7	326.3	Est. chromic oxide content of ores mined- t. tons
Iron	19.0	565	10	792	Est. iron content of ores mined- t. tons
Coal	3.0	40.55	87.75 (a	151.71 (a	Coal production- t. tons
Limestone	5.1	167	120	446	Cement production- t. tons
Mining & quarrying, n.e.c.	12.0	(Measured by the indicator for the rest of Mining & quarrying)			

SOURCES: Table II-8 for the net value product in 1956 and Appendixes III-1 and III-2 for the indicators.

NOTES: a) Converted from barrels at 0.1706 metric tons (4 bags of 94 pounds each) per barrel.

TABLE III-4

INDICATORS OF THE REAL PRODUCT IN PHILIPPINE MANUFACTURING, 1938, 1948 AND 1956

Industry	Net Value Product, 1956	Indicators 1938	1948	1956	Specifications
MANUFACTURING	1,482.1				
Food, manufactured	432.7				
Milled rice products	188.0	(a 1,826	(b 1,902	(c 3,310	T. Tons- palay production on farms
Milled corn products	23.5	(a 452.6	(b 649.4	(c 910.4	T. Tons- shelled corn production on farms
Bakery products	30.7	92.40	165.43	214.57	T. Tons- domestic consumption of wheat flour
Centrifugal sugar mill & sugar refinery plant products	170.1	(c 924.6	(c 511.5	(c 1,071.2	T. Tons- centrifugal sugar production
Muscovado & panocha	6.7	(c 53.58	(c 33.25	(c 62.12	T. Tons- muscovado & panocha production
Desiccated coconut	13.7	34.28	61.43	47.18	T. Tons- desiccated coconut exports
Beverages	121.5				
Distilled, rectified & blended liquors	22.0	105.46	21.54	30.20	M. proof liters- production of distilled spirits

TABLE III-4
(continued)

Industry	Net Value Product, 19568	Indicators 1938	1948	1956	Specifications
Beverages (cont'd)					
Fermented beverages	51.2	5.862	31.242	57.422	M. gauge liters- production of fermented liquors
Soft drinks & carbonated water	48.3	1,180	1,677	5,100	Number of persons usually occupied in the production of soft drinks & carbonated water
Tobacco products	187.4				
Cigarettes	173.4	3,291	1,816	14,178	M. cigarettes- production
Cigars	14.0	307.38	87.64	87.28	M. cigars- production
Textiles & finished textile products	118.4				
Cotton yarn	8.9	0.921	0.534	5.144	T. Tons- domestic consumption of raw cotton
Cotton & rayon fabrics	22.2	3.320	1.318	10.846	T. Tons- domestic consumption of cotton yarn
Finished textile products of cotton & rayon fabrics	87.3	73.3	66.1	100.0	Index of cotton fabric production & imports of cotton & rayon cloth less re-exports (1956 = 100.0)

TABLE III-4
(continued)

Industry	Net Value Product, 1956	Indicators 1938	1948	1956	Specifications
Wood products except furniture	49.2				
Sawmill & planing mill products	39.4	340.4	414.5	417.0	M. board feet- lumber production
Plywood and veneered panels	9.8	--	60	2,000	Number of persons usually occupied in the production of plywood & veneered panels
Paper & paper products	14.5				
Articles of pulp, paper & paperboard	14.5	200	540	2,750	Number of persons usually occupied in the production of pulp, paper and paperboard articles
Printed & published materials & allied products	34.7				
Newspapers, magazines & periodicals	15.5	1,228	2,335	5,600	Number of persons usually occupied in the publishing of newspapers, magazines & periodicals
Printed & published materials & allied products, n.e.c.	19.1	4,496	3,132	4,900	Number of persons usually occupied in the production of printed & published materials & allied products, n.e.c.

TABLE III-4
(continued)

Industry	Net Value Product, 1956	Indicators 1938	1948	1956	Specifications
Chemicals & chemical products	77.4				
Vegetable oils	12.8	200.0	96.2 (c	259.0	T. Tons- coconut oil production
Products made largely of coconut oil	35.4	34.7	52.4	154.0	T. Tons- domestic consumption of coconut oil
Medical & pharmaceutical preparations	19.8	150	414	2,250	Number of persons usually occupied in the production of medical & pharmaceutical preparations
Paints, varnishes & lacquers	9.4	95	316	625	Number of persons usually occupied in the production of paints, varnishes & lacquers
Products of petroleum and coal	107.8	-	-	n.e.	
Non-metallic mineral products, except products of petroleum & coal	32.4				
Glass containers	10.6	175	117	1,200	Number of persons usually occupied in the production of glass containers
Cement	21.8	167	120 (d	446 (d	T. Tons- cement production

TABLE III-4
(continued)

Industry	Net Value Product, 1956	Indicators 1938	1948	1956	Specifications
Basic metal products & other metal products, dexcept machinery & transportation equipment	15.6				
Miscellaneous primary metal industry products	6.3	--	--	n.e.	
Fabricated wire products	4.4	35	--	577	Employment in fabricated wire products establishments
Metal shipping barrels, drums, kegs & pails	4.9	--	--	n.e.	
Transportation equipment	39.1				
Motor vehicles except combat vehicles & motorcycles	13.8	--	--	n.e.	
Motor vehicles & cycles, repaired	25.3	32.30	34.59	65.79	T. cars registered
Manufacturing, not included elsewhere	245.5	(Measured by the indicator for the rest of Manufacturing)			

SOURCES: Table II-10 for the net value product in 1956 and Appendixes III-1 and III-2 for the indicators.

NOTES: a) May not refer strictly to calendar 1938.
b) 1947-48 crop-year figure.
c) Simple average of data for successive crop years.
d) Converted from barrels at 0.1706 metric tons (4 bags of 94 pounds each) per barrel.

greater than the percentage of shelled corn milled;[20] so the former is probably a more reliable indicator than the latter. Points made in the evaluation of the indicators for agricultural crops are also applicable here - the possibility of understatement in 1938 because of incomplete counting and of overstatement in 1948 from the estimates for areas not completely enumerated, and a more certain and greater downward bias in 1948 because of the use of data from the 1947-48 crop year only.

The indicators for cotton yarn, cotton and rayon fabrics, and finished textile products of cotton and rayon fabrics derived in Table III-5 follow logically from the method of estimating the net value product for 1956. Domestic consumption of raw cotton is used for cotton yarn, domestic consumption of cotton yarn for cotton and rayon fabrics,[21] and for finished textile products, an index combining cotton fabric production less exports of cotton cloth[22] with imports of cotton and rayon cloth less re-exports. The value of cotton and rayon fabric production and the value of imports of cotton and rayon fabrics provide the weights for the index.[23] It is more appropriate to employ the value added to domestic and imported fabrics as the weights but that information is not available.

Since the production of raw cotton enters into all three indicators the possible deficiencies in the agricultural data are again pertinent. In addition, the raw cotton figure for 1956, obtained by taking a simple average of the data for the 1955-56 and 1956-57 crop years, must be viewed as an approximation since production increased from 131.9 metric tons in 1955-56 to 522.1 metric tons in 1956-57.[24] However, raw cotton production is much less important to the indicators in 1956 than in the other years and decreases in importance the higher the degree of processing. Because unsalvageable waste in yarn production is not allowed for, the indicator for cotton and rayon fabrics is overstated in all three years, the most in 1956 and the least in 1938; yarn production was most important relative to net imports in 1956 and least important in 1938. Acting to offset this too rapid growth, however, is the exclusion of rayon yarn imports which most likely increased more rapidly than cotton yarn imports. These comments about yarn waste and the exclusion of rayon yarn imports are relevant to the indicator for finished textile products too. The reliability of the index used for finished textile products is also slightly affected by the possibility of overvaluation of imports. If overvaluation did exist then the index shows a bit too much of a decrease between 1938 and 1948 and slightly excessive increases between 1938 and 1948 on the one hand and 1956 on the other.

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[20] In the estimates of net value product for 1956 it will be recalled that 93.0% of the palay was assumed to be milled and 25.8% of the corn.

[21] Information on the amount of rayon yarn imports is unavailable for 1938 and 1948.

[22] Exports of cotton fabrics other than cloth were negligible in all three years.

[23] Exports and re-exports of cotton and rayon fabrics were nil in 1956.

[24] Maulit, letter (February 11, 1960).

TABLE III-5

DERIVATION OF THE INDICATORS OF REAL PRODUCT FOR COTTON YARN, COTTON AND RAYON FABRICS, AND FINISHED TEXTILE PRODUCTS OF COTTON AND RAYON FABRICS IN THE PHILIPPINES, 1938, 1948 AND 1956

	1938	1948	1956
Cotton yarn			
	(a	(b	(c
Production of raw cotton	545	529	327
Net imports of raw cotton	376	5	4,817
Domestic consumption of raw cotton (tons)	921	534	5,144
Cotton & rayon fabrics			
Production of cotton yarn	921	534	5,144
Net imports of cotton yarn	2,399	784	5,702
Domestic consumption of cotton yarn (tons)	3,320	1,318	10,846
Finished textile products of cotton & rayon fabrics			
Production of cotton fabrics (tons)	3,320	1,318	10,846
Index of cotton fabric production (1956 = 100.0)	30.61	12.15	100.00
Value of cotton & rayon fabric production (million pesos)			70.00
Imports of cotton & rayon cloth less re-exports (square yards)	180.46	183.19	168.44
Index of cotton & rayon cloth imports less re-exports (1956 = 100.0)	107.13	108.75	100.00
Value of cotton & rayon fabric imports (million pesos)			88.55
Index of cotton fabric production & imports of cotton & rayon cloth less re-exports (1956 = 100.0)	73.3	66.1	100.0

SOURCES: Production of raw cotton: 1938: Census...1939...Population and Agriculture, p. 1169; 1948: Census...1948...Agriculture, p. 2706; 1956: Maulit, letter (February 11, 1960).

TABLE III-5
(continued)

SOURCES (contid)

Trade in raw cotton, cotton yarn, and cotton and rayon fabrics: 1938: Bureau of Customs, Annual Report...1938, pp. 153-155, 162, 305 and 339; 1948: Bureau of the Census and Statistics, Foreign Trade...1948 and 1949, pp. 47-48, 63, 181, 216 and 222; 1956: Bureau of the Census and Statistics, Foreign Trade...1956, pp. 79, 141-145, 149, 151 and 331.

Value of cotton and rayon fabric production: Table II-12.

Final index: Weighted by the values of cotton and rayon fabric production and cotton and rayon fabric imports in 1956.

NOTES: a) May not refer strictly to calendar 1938.
b) 1947-48 crop-year figure.
c) Simple average of data for the 1955-56 and 1956-57 crop years.

For several industries the number of persons usually occupied therein is used as the indicator. These industries consist of soft drinks and carbonated water; plywood and veneered panels; articles of pulp, paper and paperboard; newspapers, magazines and periodicals; printed and published materials and allied products, not elsewhere classified; medical and pharmaceutical preparations; paints, varnishes and lacquers; and glass containers. For fabricated wire products the number of persons employed rather than the number usually occupied in the industry is used.

The labor figures for 1948 are taken from the Census of Population,[25] while those for 1938 are, in the main, revisions for reasons of comparability of data from the 1939 Census of Population.[26] The revisions are necessary because the data are reported partly by industry and partly by occupation. For example, the bottlers in a soft drink firm are counted in that industry but office workers in the firm are lumped together with office workers from all industries. The revisions are made by deducting from the 1948 total for each industry the number of persons included in 1948 in occupations listed

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[25] Census...1948...Population, pp. 450-503 passim.

[26] Census...1939...Population and Agriculture, pp. 473-482 and 496-504 passim.

separately in 1938 and applying the ratio between the total and the number remaining to the 1938 figure analogous to the latter. The 1938 and 1948 occupational categories are not always identical and it is possible that a few of the occupations deducted in 1948 are actually included in the industry classification in 1938. The 1938 figures would then be overstated to the extent of the incorrect deductions.

In the case of printed and published materials and allied products a prior adjustment has to be made in 1938. The figure for that year is not broken down into newspapers, etc. and other printed and published materials; only a total is given. To provide the breakdown, the 1948 figure for newspapers, etc. is, after being adjusted for the occupations excluded in 1938, extrapolated back to the earlier year by net imports of newsprint paper.[27]

The 1939 Census provides no specific information of the number of persons occupieddin producing medical and pharmaceutical preparations or glass containers.[28] Estimates are therefore made based on information from the Survey of Manufactures on the number of large establishments organized in each industry before 1945,[29] allowing for the probably smaller scale of operations before 1945 and the existence of medium and small establishments in the medical and pharmaceutical products field. A similar method is used to estimate employment in fabricated wire products in 1938. However, the number of persons employed rather than the number whose usual occupation was in the industry is estimated because the 1956 information is given on the former basis and the 1948 figure is zero in either case.

The 1956 labor figures are all estimates derived from information on average employment in large manufacturing establishments for four payroll periods during 1956.[30] So as to be comparable with the Census data the average employment figures are adjusted in several respects. In using average employment as a start it is assumed that the number of persons usually occupied in each industry, but occupied in other industries or out of the labor force entirely during the payroll periods, just about offsets the number of persons attached to the industry during the payroll periods but not usually occupied in it. Since the industries for which labor data are used are not seasonal in nature this assumption leads to little error. The average employment figure in each case is then put on the usual-occupation basis used in the Censuses by adding an estimate of unemployment. Since unemployment in these industries is likely to have been low because they were, on the wholed relatively new and

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[27] The figures on net imports are from Bureau of Customs, Annual Report ...1938, pp. 250 and 345 and Bureau of the Census and Statistics, Foreign Trade...1948 and 1949, p. 74.

[28] Such activities did exist at that time and probably are included in the miscellaneous manufacturing classification in the Census.

[29] 1956 Annual Survey of Manufactures, Vol. 1, Series 2, pp. 98-99.

[30] Ibid., pp. 37-40 passim.

growing, only small additions are made. Small allowances are made also for the persons who are not covered in the data for manufacturing establishments (e.g., main-office personnel). To complete the adjustment, the number of persons occupied in medium and small operations is determined for each industry by dividing the net value product of smaller establishments in 1956 by a roughly estimated net value product per person.[31] Guiding the estimation of net value product per person in each case is the assumption that the value is less for smaller establishments than it is for large ones.

There are several industries for which the real product in 1938 and 1948 is assumed to be zero; it is of course not necessary to obtain indicators for these in 1956. The industries are products of petroleum and coal; miscellaneous primary metal industry products; metal shipping barrels, drums, kegs and pails; and motor vehicles.[32] In addition the real product for plywood and veneered panels is set at zero for 1938 and the real product for fabricated wire products is set at zero for 1948. The evidence for the zero assumptions is both direct and circumstantial. It includes specific mention of the nonexistence of some of the activities together with the lack of any evidence of other activities in tax, foreign trade, and census sources, and in the Survey of Manufactures (which reports the year in which establishments were organized). It is possible that production in some cases did exist in 1938 or 1948 but relative to 1956 the levels must have been negligible.

To cover manufacturing, not included elsewhere, the indicator for all the rest of manufacturing is used. The variety of industries included in this category make it impossible to judge the applicability of the indicator completely, but there is one factor making for understatement in 1956 relative to the other two years, especially 1938. Newer industries, which can be expected to show greater relative growth in real product than manufacturing as a whole does, have a heavier weight in this category than in manufacturing as a whole.

V. CONSTRUCTION

Several different types of indicators are used for construction and they are all somewhat approximate. In the case of government the value of construction is deflated by an index of the wage rates of laborers in public works projects. The estimated number of houses built is used as the indicator for own-account house construction and domestic timber and lumber consumption for other private construction. Tables III-6 through III-9 show the three indicators and how they are derived.

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[31] It will be remembered from Chapter II that the production of glass containers and fabricated wire products in smaller establishments is assumed to be nil, and therefore no calculation is made for these industries.

[32] It will be recalled that these industries are restricted to large establishments in the estimates of this study.

TABLE III-6

INDICATORS OF THE REAL PRODUCT IN CONSTRUCTION IN THE PHILIPPINES, 1938, 1948 AND 1956

Industry	Net Value Product, 1956	Indicators 1938	1948	1956	Specifications
CONSTRUCTION	41988				
Government construction	144.8	88.6	125.0	100.0	Index of the value of government construction deflated by the wage rates of selected workers inopublic works projects (1956 = 100.0)
Non-commercial construction	110.0	207	245	267	T. owner-occuped houses constructed
Other private construction	165.0	88.8	102.9	100.0	Index of timber and lumber consumption (1956 = 100.0)

SOURCES: The section on construction in Chapter II for the net value product in 1956 and Appendixes III-1 and III-2 for the indicators.

TABLE III-7

DERIVATION OF THE INDICATORS OF REAL PRODUCT FOR GOVERNMENT CONSTRUCTION IN THE PHILIPPINES, 1938, 1948 AND 1956

	1938	1948	1956
Government construction			
(1) Value of government construction (million pesos)	42.4	(a 137.1	(a 193.1
(2) Index of government construction (1956 = 100.0)	21.9	(a 62.6	(a 100.0
(3) Average daily wage rate of selected skilled workers in public works projects	(b ₱1.56	₱2.96	₱4.32
(4) Average daily wage rate of selected unskilled laborers in public works projects	(b ₱0.94	₱1.92	₱4.02
(5) Weighted index of average daily wage rates of selected skilled and unskilled laborers in public works projects (1956 = 100.0)	24.7	50.1	100.0
(6) Deflated value of government construction (1956 = 100.0)	88.6	125.0	100.0

SOURCES: (1): 1938: "A Study of Philippine Budgets," American Chamber of Commerce [of the Philippines] Journal, XIX (December, 1939) 22; 1948 and 1956: Trinidad, ...National Income Accounting..., p. 88.
(2): Calculated from (1).
(3) & (4): 1938 and 1948: Republic of the Philippines, Bureau of the Census and Statistics, Abstract of Philippine Statistics, I (April-June, 1951) Table 6; 1956: Bureau of the Census and Statistics, Journal of Philippine Statistics, X (October-December, 1957) Tables 3 and 4.
(5): Calculated from (3) and (4) using the estimated daily wage bills (i.e., the total number of workers x the average daily wage rate) for the two classes of laborers as weights.
(6): (2) ÷ (5).

NOTES: a) Simple average of data for successive fiscal years ended June 30.
b) Data refer to 1940.

TABLE III-8

DERIVATION OF THE INDICATORS OF REAL PRODUCT FOR NON-COMMERCIAL CONSTRUCTION IN THE PHILIPPINES, 1938, 1948 AND 1956

Number of owner-occupied dwellings (thousands)

January 1, 1939	2,587
October 1, 1948	2,777
June 1, 1956	3,324

Annual rate of growth

1/1/39-6/1/56	1.45%
10/1/48-6/1/56	2.33%

Number of owner-occupied dwellings (thousands)

January 1, 1939	2,587
January 1, 1938	2,550
January 1, 1949	2,792
January 1, 1948	2,729
January 1, 1957	3,351
January 1, 1956	3,304

Number of owner-occupied dwellings constructed (thousands)

Increase inothe number of dwellings during 1938	37
Replacements & major repairs during 1938	170
Number of dwellings constructed during 1938	207
Increase in the number of dwellings during 1948	63
Replacements & major repairs during 1948	182
Number of dwellings constructed during 1948	245
Increase in the number of dwellings during 1956	47
Replacements & major repairs during 1956	220
Number of dwellings constructed during 1956	267

SOURCES: Number of owner-occupied dwellings, January 1, 1939: Census...1939... Population and Agriculture, p. 887; October 1, 1948: Census...1948... Population, p. 2249; June 1, 1956: computed from PSSH Bulletin, Series 2, Table 23.

Number of dwellings at the beginning and end of each year are obtained by applying the calculated annual growth rates.

Replacements & major repairs are assumed to be equivalent to 1/15 of the number of dwellings at the beginning of each year.

TABLE III-9

DERIVATION OF THE INDICATORS OF REAL PRODUCT FOR PRIVATE CONSTRUCTION, EXCLUDING NON-COMMERCIAL, IN THE PHILIPPINES, 1938, 1948 AND 1956

	1938	1948	1956
Lumber (million board feet)			
Production	340.4	414.5	417.0
Imports	10.6	---	---
Available supply	351.0	414.5	417.0
Exports	55.0	10.8	63.4
Domestic consumption	296.0	403.7	353.6
Index of domestic lumber consumption (1956 = 100.0)	83.7	114.1	100.0
Value of lumber consumed (million pesos)			61.94
Timber (million board feet)			
Production	1,014.8	924.5	1,918.9
Imports	0.6	---	---
Available supply	1,015.4	924.5	1,918.9
Exports	105.0	14.4	881.7
Timber used for lumber	680.8	829.0	834.0
Domestic consumption	239.6	81.1	203.2
Index of domestic timber consumption (1956 = 100.0)	107.9	39.9	100.0
Value of timber consumed (million pesos)			10.95
Index of timber & lumber consumption (1956 = 100.0)	88.8	102.9	100.0

SOURCES: Timber and lumber production: Tables III-1 and III-4.

Timber and lumber trade: 1938: exports are estimates of the writer (see the section in this chapter on forestry), and imports are from Bureau of Customs, Annual Report...1938, p. 287; 1948: Bureau of the Census and Statistics, Foreign Trade...1948 and 1949, pp. 88 and 185-187; 1956: Bureau of the Census and Statistics, Foreign Trade...1956, pp. 77 and 333-335.

TABLE III-9
(continued)

SOURCES (cont'd)

Value data: Timber consumption is valued at the unit cost of timber purchased by large establishments manufacturing unworked lumber. (See the discussion on forestry in Chapter II.) The value of lumber consumption is equal to the value of production minus the value of exports. To obtain the former the amount produced is multiplied by theounit value of lumber sold by large manufacturing establishments as calculated from 1956 Annual Survey of Manufactures, Vol. 1, Series 2, p. 169.

Final index: Weighted by the values of timber and lumber consumed in 1956.

The figures for government construction may be deficient because of errors in the value of construction and in the deflator. It is not certain that the coverage of the value of construction in 1938 is the same as the coverage for the other two years. Also, the 1948 and 1956 figures represent averages of fiscal-year data. The wage-rate index is relatively crude. Data on the average daily wage rates of skilled and unskilled workers in public works projects provide the basis for the index. It is calculated by using the estimated daily wage bill (i.e., the number of workers multiplied by the average daily wage rate) for each of the two classes of workers as the weights. Given the rather divergent movements in the wage rates of the two classes,[33] especially between 1938 and 1948 on the one hand and 1956 on the other, even a moderate error in the weights will affect the index significantly. The wage rates and the number of workers refer to a specific date in 1956 (apparently June 15) and the portion of the total pay accounted for by each of the classes at that time may not be typical of the year as a whole. Also, in order for the deflated value of construction to have 1956 weights the deflator should have current-year weights. The wage rates of the various types of workers within each class are weighted by current-year data;[34] but separate information on the number of workers by type or class is not available for 1938 and 1948, so the use of current-year weights for the wage rates of each class in the index computed in this study is not possible.

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[33]The wage rates given in Table III-7 for 1938 actually are for 1940. However, the available evidence indicates little change between the two years. (See Republic of the Philippines, Bureau of the Census and Statistics, Yearbook of Philippine Statistics, 1946, Tables 144 and 145.)

[34]Letter to the writer from Mrs. Marcelina C. Sarmiento, Chief, Industrial and Allied Statistics Division, Bureau of the Census and Statistics, Republic of the Philippines (February 3, 1960) and the sources cited for Lines (3) and (4) in Table III-7.

For own-account house construction the indicator is the estimated number of owner-occupied dwellings built including the "dwelling-equivalent" of major repair work. The number of owner-occupied dwellings as of January 1, 1939, October 1, 1948 and about June 1, 1956 is available from the Censuses and the Philippine Statistical Survey of Households. The number at the beginning and end of 1938 and 1956 is estimated by using the annual rate of growth in the number of dwellings between January 1, 1939 and June 1, 1956 and the number at the beginning and end of 1948 is obtained by using the annual rate of growth between October 1, 1948 and June 1, 1956.

Construction during each of the three years is derived by adding together the estimated increase in the dwelling stock on the one hand, and a rough estimate of replacements andothe "dwelling-equivalent" of major repair work on the other. The latter estimate is set at 1/15 of the dwelling stock at the beginning of each year. In the official depreciation calculations the life of dwellings of light and mixed materials is set at 15 years. Since the dwelling stock in the Philippines probably grew more or less steadily over the years (except for the period of World War II), the actual number of replacements in 1938, 1948 and 1956 was somewhat less than 1/15 of the stock at the beginning of each of the three years. The difference is taken as the "dwelling-equivalent" of major repair work. Implicit is the not unrealistic assumption that the amount of major repairing done is related to the magnitude of the growth in the dwelling stock over the years. This manner of estimating repairs does not, however, consider the time-pattern of the growth or the effects of factors other than age - e.g., typhoons and floods. Thus replacements and major repairs are overstated in 1948 relative to the other years because more of the dwelling stock was newer then. The figure for 1956 is probably overstated as compared to that for 1938 for the same reason, but to a lesser extent. On the other hand, the actual increase in the dwelling stock during 1948 was greater than that shown because of postwar reconstruction. One other possible source of error is the 1956 Survey figure itself.[35] Because the 1956 figure does enter into the extrapolations any deficiency in it will be reflected in the data for 1938 and 1948. But the resulting errors in the increase in dwelling stock and in the number of replacements and major repairs for those years will be in opposite directions.

A crude index of raw materials input is used for other private construction. It covers the domestic consumption of lumber and of timber not converted into lumber. The weights of the index are the values at the producer level of the lumber and timber consumed. Timber consumption is valued by the unit cost of timber purchased by large establishments manufacturing unworked lumber, as derived in the estimates of the net value product of forestry in Chapter II. Since logging and milling operations are usually carried on close by each other the unit cost to mills is just about the same as the unit price obtained by timber operators. The value of lumber consumption is obtained by taking the difference between exports in

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[35]See Pillai, "Sample Surveys...," pp. 12-13 and PSSH Bulletin, Series 3, p. 1.

1956 and the value of production;[36] the latter is calculated by using the unit value of lumber sold by large manufacturing establishments to value the amount of lumber produced. The value added to export lumber after manufacture is assumed to be about canceled by the under-valuation of shipments by exporters trying to conceal acquisitions of foreign exchange.

Aside from the rough nature of the index other possible sources of error lie in the under-reporting of timber production, in the timber-lumber recovery ratio, and in the estimate of timber versus lumber production in 1938.[37] The under-reporting of timber production affects the timber figure in each of the years and also results in an understatement of the timber value weight in 1956 which, in turn, means that the index is a bit overstated in 1948 and understated in 1938.

VI. TRANSPORTATION AND OTHER UTILITIES

For transportation and other utilities a number of different types of indicators are utilized. The data for the industry appear in Table III-10. Some of the indicators, especially those used for motorized road transportation, require discussion.

Vehicle registration by class is used for comparing the real product of motorized road transportation in 1948 and 1956 and labor data for comparing the real product in 1938 and 1948. Two types of indicators are necessary because there is no registration information available for the prewar period and no labor information for 1956. The comparison of the data for 1956 with the data for 1938 thus involves the implicit assumption that each type of indicator represents comparative real product as accurately as the other does.

Data from the 1939 and 1948 Population Censuses provide the basic data for the labor estimates. However, the industry detail for motorized road transportation in 1938 is limited, so data from the 1938 Census of Transportation are used as a supplement. The information as given in the Population Census is broken down in the proportions shown by the Transportation Census, after being adjusted for the persons actually in motorized road transportation but covered in separate occupational categories. The procedure is shown in Table III-11.

Data from the 1948 Population Census are used for all of motorized road transportation in 1948 except for TH trucking. The TH truck figure, which is not explicit in the Census, is obtained by multiplying the number employed in the industry according to the 1948 Census of Transportation by the ratio of (1) the number of persons usually occupied in the other sectors of motorized

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[36] Lumber imports were negligible.

[37] See the section in this chapter on forestry.

TABLE III-10

INDICATORS OF THE REAL PRODUCT IN TRANSPORTATION AND OTHER UTILITIES IN THE PHILIPPINES, 1938, 1948 AND 1956

Industry	Net Value Product, 1956	Indicators 1938	1948	1956	Specifications
TRANSPORTATION AND OTHER UTILITIES	460.1				
Transportation	368.8				
Railroad	15.8				
Passenger	9.2	433	344	603	M. passenger-kmd Manila RR. Co.
Freight	6.6	162	150	157	M. metric ton-km: Manila RR. Co.
Road, motorized	194.4				
TPU bus operators	130.0		15.95	23.78	T. TPU vehicles registered
		10.90	36.83		T. persons usually occupited in TPU bus enterprises
TH truck operators	25.3		1.350	2.981	T. TH vehicles registered
		2.602	9.498		T. persons usually occupied in TH truck enterprises
AC vehicle operators	26.2		1.587	6.560	T. AC vehicles registered
		2.134	8.468		T. persons usually occupied in AC vehicle enterprises
Operators of taxicabs & other automobiles for hire	12.9		2.457	3.687	T. taxis and other commercial automobiles registered
		1.842	10.780		T. persons usually occupied in taxi, etc. enterprises

TABLE III-10
(continued)

Industry	Net Value Product 1956	Indicators 1938	1948	1956	Specifications
Transportation (cont'd)					
Road, non-motorized	4.0	28.74	11.86	5.00	T. persons usually occupied in calesa, carretela & carreton enterprises
Water	128.9				
Internal shipping	76.4	10.13	(a 10.57	(a 13.69	M. net tons- Philippine vessels in coastwise trade entering & clearing 9 ports of entry
Handling of internal cargo	22.5	10.13	(a 10.57	(a 13.69	Ditto
Handling of overseas cargo	30.0	4.904		11.214	M. tons- inward & outward overseas cargo
			(a 24.65	(a 34.00	M. net tons- entrances & clearances of vessels in the foreign trade
Air	15.2	2.539	174.876	140.890	M. passenger-km: scheduled airline services
Communications	24.3				
Telephone	8.9	29	12	56	T. telephones in operation: Philippine Long Distance Telephone Co. & Bureau of Telecommunications
Telegraph, government-operated	4.8	1,729	(a 1,599	(a 4,134	T. messages handled
Posts	10.4	522.0	(a 415.3	(a 1,093.1	M. pieces of mail handled

TABLE III-10
(continued)

Industry	Net Value Product, 1956	Indicators 1938	1948	1956	Specifications
Electric energy production & distribution	52.0	209	433	1130	M. kilowatt hours- electric energy production
Transportation & other utilities, n.e.c.	15.0	(measured by the indicator for the rest of Transportation & other utilities)			

SOURCES: Table II-13 for the net value product in 1956 and Appendixes III-1 and III-2 for the indicators.

NOTES: (a Simple average of data for successive fiscal year ended June 30.

TABLE III-11

DERIVATION OF THE INDICATORS OF REAL PRODUCT FOR MOTORIZED ROAD TRANSPORTATION IN THE PHILIPPINES, 1938

	Number of employees, Census of Transportation (1)	Number usually occupied in Transportation, Census of Population (2)	Number usually occupied in Transportation adjusted for persons reported elsewhere (3)	Number usually occupied as per Col. (3) adjusted to Census of Transportation distribution (4)
TPU bus operators	13,092			10,904
TH truck operators	3,124	15,111	15,640	2,602
AC vehicle operators) Operators of taxicabs & other automobiles for hire	4,774	1,812	1,842	2,134 1,842
	20,990	16,923	17,482	17,482

SOURCES: Col. (1): Commonwealth of the Philippines, Commission of the Census, Census of the Philippines, 1939, Special Bulletin, No. 4, Reports for Economic Census, p. 147.

Col. (2): Census...1939...Population and Agriculture, p. 5038

Col. (3): Colo (2) x the ratio between the total number usually occupied in the industries in 1948 and the number in 1948 included in the fewer occupations covered in the industries in 19388 The data for 1948 were obtaiomed from Census...1948...Population, pp. 514-521.

Col. (4): Total in Col. (3) broken down in the proportions of Col. (1).

road transportation according to the Population Census to (2) the number employed in these industries according to the Transportation Census.[38] The various Economic Censuses in 1948, of which the Census of Transportation is one, are considered less thorough than the Population Census.[39] For example, the Transportation Census in 1948 shows about half of the labor activity in motorized road transportation shown by the Population Census, as contrasted with the somewhat different relationship apparent in 1938.[40] In preparing the estimate for TH trucking in 1948 it is assumed that the undercoverage in the Census of Transportation of this and the other groups is the same.

As Table III-10 shows, the number of persons usually occupied in motorized road transportation in 1948 comes to several times the number of vehicles registered (except in the case of TPU bus operations). Assuming that the registration figures are accurate this means that the labor figures are too large. Because of the practice of TH operators of registering their vehicles as private trucks registration in this category is understated, though probably not to the extent of freeing the labor figure from suspicion. Table III-11 suggest that the labor figures in 1938 are more accurate.[41] Thus the overstatement of the 1948 data means that the indicators for motorized road transportation contain an upward bias between 1938 and 1948 and also between 1938 and 1956; the latter bias, which arises because of the linking of the labor data with the registration figures, is smaller than the former.

As for the other indicators in transportation and other utilities, those for internal shipping and the handling of internal water cargo may be deficient because traffic at only nine ports is covered; however, these are the major ports. The comparisons for the handling of overseas cargo also must be viewed with care because of the linking of two different types of indicators. In communications the indicator for posts may be too low in 1948 as compared to the other two years and too low in 1956 as compared to 1938. The number of pieces of mail delivered is much smaller relative to the number posted in fiscal 1947-48, 1948-49 and 1955-56 than it is in fiscal

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[38]For the data see ...1948...Economic Census..., p. 108 and Census..., 1948 ...Population, pp. 514-521.

[39]United Nations, Technical Assistance Administration, The National Income of the Philippines..., pp. 24-26.

[40]See Table III-11.

[41]As mentioned in the discussion of labor indicators in manufacturing, the adjustment of 1938 Population Census data for comparability with the 1948 Census figures involves the possibility of overstatement; but in the case of motorized road transportation the adjustment is minor. There is one source of slight understatement in 1938 - street car operations, which were nil after World War II, are not reflected in the data.

1956-57 and probably in 1938.[42] For postal and telegraph communications, and for water transportation, there is also the possibility of error in the utilization of averages of data for the fiscal years overlapping 1948 and 1956 as the figures for the calendar years.

VII. SERVICES

Labor indicators are used for most services. (See Table III-12.) Their use involves considerable adjustment of published data in order to achieve comparability. In general figures from the Population Censuses provide the basis for the 1938 and 1948 labor estimates while various sources are used for the 1956 estimates.

In the case of government services, the indicator for the armed forces refers to both members of the Philippine Armed Forces and civilian personnel associated with the armed forces. The number in the Philippine Armed Forces in 1956 is estimated as 46,000 on the basis of information available for a later period; the number of civilian personnel was obtained from the Civil Service Commission.[43] A comparable total can be obtained from the 1948 Census, but not from the 1939 Census. For 1938, the authorized strength of the Regular Army at that time, 10,000 men,[44] is used for part of the indicator; the number of civilian personnel is estimated by comparing the number of civilian and military personnel in the other years and assuming that the former expanded by less than the latter. The Regular Army was probably below its authorized strength in 1938; on the other hand, reservists on active duty are not included in the estimate.

The indicator for other government services reflects the breakdown and limited coverage of government in this study. Not included in the figures are the military and civilian personnel of the Philippine Armed Forces, teachers, and employees of government enterprises. The figures are intended to exclude government construction workers also, but are less precise in this respect. No attempt is made to exclude other persons whose activities are covered elsewhere - e.g., physicians, lawyers, etc. - but their inclusion does not lead to signficant error.

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[42]The postal figure for 1938 is an estimate of the writer based on incomplete information from Commonwealth of the Philippines, Bureau of Posts, Annual Report for the Fiscal Year Ended December 31, 1938, pp. 26 and 139.

[43]Letter to the writer from F. P. Varela, Deputy Commissioner of Civil Service, Republic of the Philippines (November 25, 1959).

[44]A. V. H. Hartendorp, History of Industry and Trade of the Philippines, p. 346.

Data from the Civil Service Commission provide the basis for the 1956 figure.[45] As part of the process of limiting the coverage of government, workers on projects of the Bureaus of Public Works and Public Highways are deducted. No deduction is made for construction workers employed by provinces, chartered cities and municipalities, since they are apparently not included in the Civil Service Commissionodata. The Commission figures on employment at these other levels of government are substantially below totals from the 1948 Census which do include construction workers. Some under-reporting of non-national government employment in 1956 is admitted[46] but this does not appear sufficient to explain the entire difference between the 1948 and 1956 data. So it seems reasonable to conclude that construction workers are not covered in the Commission figures. There are two sources of overstatement in the 1956 figure relative to the data for the other years. One is that the figures for 1938 and 1948 refer only to those persons whose usual occupation was in government while the 1956 figure apparently refers to the total number of persons employed by government whether it was their usual occupation or not. Secondly, the 1948 figure, and the 1938 figure which is derived from it, exclude some professional medical personnel.[47] Acting to offset these factors, however, is the under-reporting of non-national government employment. The use of an average of fiscal-year data may also have some effect on the 1956 figure, but if there is any effect the direction is uncertain.

For 1948 an estimate is made from the Census total for the national government, provinces, chartered cities and municipal governments. Military and civilian personnel of the Philippine Armed Forces, teachers and probably all but a few of the employees of government enterprises aside from the Bureaus of Posts and Telecommunications are not included in this total; construction workers are included. The number of employees of the two Bureaus is available from other sources.[48] The deduction that is made for construction workers is a rough one, however. The number of common, unskilled, and skilled laborers usually occupied at the four levels of government provides the starting point for the deduction. This figure is then adjusted in an approximate manner for the laborers not working at construction jobs and for construction workers included in other occupational groups.[49]

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[45]Varela, letter (November 25, 1959). In adjusting the data for employees of the Bureaus of Posts and Telecommunications use also was made of the annual reports of these agencies for the fiscal year ended June 30, 1957 (Posts, p. 4 and Telecommunications, p. 17).

[46]Varela, letter (November 25, 1959).

[47]Census..o1948...Population, p. 407.

[48]Bureau of the Census and Statistics, Journal of Philippine Statistics, VII (January-March, 1954), Table 44, and Romero, letter to the writer (March 8, 1960).

[49]Certain skilled occupations - e.g., bricklayers, carpenters, electricians - are not included with skilled laborers in the Census but are listed separately.

TABLE III-12

INDICATORS OF THE REAL PRODUCT IN SERVICES IN THE PHILIPPINES, 1938, 1948 AND 1956

Industry	Net Value Product, 1956	Indicators 1938	1948	1956	Specifications
SERVICES	1,489.7				
Government services	418.6				
Armed forces	115.3	12.00	43.78	52.33	T. persons, military & civilian, associated with the Philippine Armed Forces
Other government services	303.3	48.80	113.93	(a 112.68	T. persons in "other government services"
Community services	426.1				
Education	278.2				
Private education	80.4				
Elementary	9.1	(b 62.9	(c 109.2	(b 161.3	T. students enrolled
Secondary	26.1	(b 42.8	(c 206.5	(b 360.2	T. students enrolled
Collegiate	38.5	(b 25.00	(c 95.33	(b 195.18	T. students enrolled
Special vocational	4.5	(b 1.50	(c 16.24	(b 48.58	T. students enrolled
Private education, n.e.c.	2.2	(measured by the indicator for the rest of Private education)			

TABLE III-12
(continued)

Industry	Net Value Product 1956	Indicators 1938	1948	1956	Specifications
Public education	197.8				
Primary	114.6	(b 1,200	(c 2,793	(b 2,531	T. students- avg. daily attendance
Intermediate	55.2	(b 229.7	(c 443.9	(b 662.9	T. students- avgi daily attendance
Secondary	22.2	(b 68.71	(c 175.36	(b 204.43	T. students- avg. daily attendance
Collegiate	5.8	(b 9.737	(c 8.743	(b 21.016	T. students- avg. daily attendance
Health services	135.5				
Physicians	84.9	3,629	4,919	8,419	Number
Dentists	21.3	2,277	1,605	5,239	Number
Nurses	22.7	3,039	4,176	7,789	Number
Midwives	6.6	1,358	1,866	3,960	Number
Religious services	10.3	3,036	3,889		Number of priests & clergymen
			1,742	2,807	Number of Roman Catholic priests
Community services, n.e.c.	2.1	(measured by the indicator for the rest of Community services)			
Business services	175.3				
Lawyers	86.7	5,073	4,653	14,754	Number
Accountants	29.3	441	786	3,313	Number

TABLE III-12
(continued)

Industry	Net Value Product, 1956	Indicators 1938	1948	1956	Specifications
Business services (cont'd)					
Engineers	50.5	1,626	3,325	7,247	Number
Architects	5.0	118	241	853	Number
Business services, n.e.c.	3.8	(measured by the indicator for the rest of Business services)			
Recreation	37.4	(measured by the indicator for the rest of Services)			
Personal services	362.2				
Domestic services	190.1	271.4	309.1	327.0	T. persons usually occupied as domestic servants
Restaurants, bars & refreshment parlors	56.5	128.8	76.8	100.0	Index of alcoholic beverage consumption (1956 = 100.0)
Hotels, lodging places & dormitories	9.6	(measured by the indicator for the rest of Personal services)			
Barbering	33.0	6,672	7,778	9,329	T. persons- male population, 5 years old and over
Beauty care	17.8	4,532	5,318	6,235	T. persons- female population, 15 years old and over
Photographic services	8.7	1,967	2,543	3,500	Number of persons usually occupied as photographers

TABLE III-12
(continued)

Industry	Net Value Product, 1956	Indicators 1938	1948	1956	Specifications
Personal services (contd)					
Funeral services	7.9	404	386	323	T. deaths
Laundry services	32.7	840.1	1,358.0	1,900.0	T. persons- population of Metropolitan Manila
Personal services, n.e.c.	2.3	(measured by the indicator for the rest of Personal services)			

SOURCES: Table II-15 for the net value product in 1956 and Appendixes III-1 and III-2 for the indicators.

NOTES: a) Simple average of data for successive fiscal years ended June 30.
b) Weighted average of successive school years, the later year given a weight of 7 and the earlier one a weight of 3.
c) Weighted average of successive school years, the later year given a weight of 6 and the earlier one a weight of 4.

In the adjustment it is assumed that the former are more numerous than the latter, since the total number in the other occupational groups is small. The figure deducted is 40,000 as compared to a total of 153,932 before the deduction.[50]

The indicator figure for 1938 is also an estimate. In the 1939 Census three groups of workers are clearly identifiable as belonging in government: provincial, city and municipal officials and employees; firemen; and a group labeled "other government employees". However, many government workers - clerks provide a prime example - are included in the occupational groups that are not included in the data by industry. To derive the indicator for 1938 the ratio of the indicator total for "other government services" in 1948 to the number in the three groups in 1948 is used.[51] The latter number is obtained by excluding from the 1948 Census total for "other government services" the number whose occupations are covered elsewhere than in the three groups in 1938.[52] The adjustment of the 1948 Census total for employees of "other government services" not covered in the three groups may be imperfect to some degree as occupations are not always defined in the same detail in the two censuses. If there is any imperfection it is probably an overstatement of the number not covered, making the 1938 total too high. For example, although separate categories were set up for clerical workers in the 1939 Census, some clerical personnel were enumerated merely as "government employees" and included in the group "other government employees".[53]

The indicator for private education is student enrollment and for public education it is average daily attendance. In both cases a weighted average is taken of school-year figures. During the immediate postwar period the school year started around July and ended in April. The figures for 1948-49 are therefore given 6/4 the weight of those for 1947-48d Before World War II and in more recent years the school year began around June and ended in Marchd Thus, in computing the averages for 1938 and 1956, 7:3 weights are used.[54]

The use of average daily attendance figures overstates the growth of public education, particularly at the primary level, between 1938 and the postwar period, especially 1948. This overstatement exists because in 1940 school

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[50]For the Census data see Census...1948...Population, pp. 590-609.

[51]Minor adjustments are first made to the 1938 figures for the three groups to exclude civilian employees of the Philippine Armed Forces and employees of non-Philippine governments.

[52]The basic data are in Census...1939...Population and Agriculture, pp. 473-482 and 496-504 passim and Census...1948...Population, pp. 590-609 passim.

[53]Census...1939...Population and Agriculture, p. 488.

[54]The private school data for the school year 1938-39 are estimates of the writer based on figures for 1936-37, 1937-38 and 1940-41 which have been published in Bureau of the Census and Statistics, Yearbook of Philippine Statistics, 1946, Table 18.

time was sharply curtailed by the substitution of a single morning or afternoon session for the former double session program. Since the early 1950's a gradual return to the double session has been occurring.[55] It would have been desirable to use average daily attendance as the indicator for private education too, but the data are not available.

For health services, and also for business services, the number of professional persons of each type is used as the indicator. The 1956 data refer to the number of persons certified in each profession and the 1938 and 1948 data to the number reporting the profession as their usual occupation. To the extent that persons qualified in a profession do not practice it as their usual occupation the 1956 figures are overstated as compared to those for the other years. On the other hand, not all persons reporting usual occupations in the professions in 1938 and 1948 may have been certified.

In several cases the figures represent estimates. In the 1939 Census dentists are grouped with opticians.[56] The two are therefore divided according to the number of each reported for 1938 in the Census of Professions.[57] The number of accountants cannot be distinguished in either the 1939 Population Census or the 1948 Population Census. Thus for each of the two years the number of accountants relative to the number of lawyers as reported in the Census of Professions is applied to the number of lawyers as reported in the Population Census.[58] In each of the years the number of lawyers reported in the former is less than half the number reported in the latter; in computing the number of accountants it is assumed that the undercoverage is the same for both professions. Architects are grouped with artists in 1938, and since there is no means of separating the two, the rate of increase in the number of architects between 1938 and 1948 is assumed to be the same as the rate of increase in the number of engineers. The Census figure for engineers in 1938 includes marine engineers[59] and the number is excluded by using internal shipping movements to extrapolate the number in 1948.[60] It will be recalled that this method was also used to exclude marine engineers from the total number when estimating the 1956 weight.

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[55] University of Chicago, Philippine Studies Program, Area Handbook on the Philippines (preliminary edition), Vol. II, pp. 760-761 and 780.

[56] Census...1939...Population and Agriculture, p. 497.

[57] Republic of the Philippines, Bureau of the Census and Statistics, Statistical Abstracts of the Philippines, 1939, Table 95.

[58] For 1939 the figures were obtained from Ibid. and Table III-12 and for 1948 from ...1948...Economic Census..., p. 342 and Table III-12.

[59] Census...1939...Population and Agriculture, p. 474.

[60] For the engineer total in 1938 see Ibid., p. 497.

For religious services the indicator for 1938 and 1948 is the total number of priests and clergymen and for 1948 and 1956 it is the number of Roman Catholic priests. The figures for 1938 and 1948 are from the Population Censuses while the figure for 1956 is an extrapolation of the number of Roman Catholic priests in 1954 by the total population of the Philippines.[61] The 1956 figure is thus more approximate than the others; its comparison with 1938 is especially subject to error because of the linking of different kinds of indicator data.

To measure the real product in domestic services the number of domestic servants is used. The total number for 1948 is available from the Population Census, but in the 1939 Census the total is not explicit. Data are available, however, on several occupations practiced predominantly in domestic service -- amahs; chauffeurs for private owners; cooks; houseboys, maids and housegirls; and "servants (kind of work not specified)".[62] The proportion that the number of persons in these occupations in domestic service in 1948 bore to the total number in domestic service in that year is assumed to apply to 1938 as well. The number in these occupations in 1948 is obtained by excluding from the 1948 total the occupations which, in the 1938 classification scheme, are not included in the categories listed above. The excluded occupations comprise paid housekeepers (included with housewives in 1938) and laundry workers (included with independent laundry workers).[63] It is assumed that the other occupations listed in 1948 are all included in the 1938 group. To the extent that they are not, the 1938 total is understated; on the other hand, some of the persons included in 1938 (e.g., cooks) practiced their occupations elsewhere than in households.

For 1956 labor force information is available from the Philippine Statistical Survey of Households but it is not quite comparable with the figures for the other two years. The latter refer to the number of persons reporting domestic service as the industry in which they were usually occupied during the year. The Survey information refers to the number primarily employed in domestic service during the survey week and to the unemployed whose last full-time job for two weeks or longer was in domestic service.[64] Survey data are available for October, 1956 and March, May and October, 1957,[65] and an average of these figures is used to measure the number of persons whose usual occupation in 1956 was domestic service. Involved is the assumption that the probably greater number in 1957 offsets the number of domestic servants in 1956

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[61]The number of Roman Catholic Priests in 1954 was obtained from Catholic Trade School, Catholic Directory of the Philippines for 1955 (Manila, Catholic Trade School, 1955) p. 469 as quoted in University of Chicago, Philippine Studies Program, Area Handbook..., p. 493. The population figures are from Adams, "New Populations Estimates...".

[62]Census...1939...Population and Agriculture, pp. 496 and 503.

[63]For the 1948 data see Census...1948...Population, pp. 622-625.

[64]PSSH Bulletin, Series 3, p. 10.

[65]Ibid., Table 7.

not living in households; these latter were not covered in the Surveys.[66] In using the average labor force to represent the usual-occupation figure it is assumed that the number of persons usually occupied in domestic service, but occupied in other industries or out of the labor force entirely during the Survey periods, just about offsets the number of persons in domestic service during the Survey periods but not usually occupied in it. Domestic service is not a major source of seasonal employment to those usually occupied elsewhere nor are secondary occupations important to those usually occupied in domestic service.[67] It also is probable that movements in and out of the labor force entirely are unimportant to domestic service activity within any given year.

Various kinds of indicators are used for personal services other than domestic, and they can be viewed only as approximate in most cases. For barbering, beauty care, funeral services and laundry services the potential market is roughly estimated. It should be remembered that for the purposes of this study the absolute number of customers is not of primary importance; the significant factor is whether or not the figures used accurately measure the number of customers in one year as compared to another. Commodity input data are utilized for restaurants, bars and refreshment parlors, and labor data are utilized for photographic services. Since no suitable information for hotels, lodging places and dormitories is available, the indicator for the rest of personal services is used for that industry.

The indicators for barbering and beauty care are the male population five years of age and over and the female population fifteen years of age and over. It seems probable that there was considerable under-enumeration of young persons in the 1948 Census;[68] so different data based on an extrapolation of results from the Philippine Statistical Survey of Households are used.[69]

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[66]For possible weaknesses in the Survey data see Pillai, "Sample Surveys...," pp. 12-13, PSSH Bulletin, Series 3, p. 1 and Oñate, "Non-sampling Errors...," pp. 87-90.

[67]See, for example, Census ...1939...Population and Agriculture, pp. 778 and 806 and Census...1948...Population, pp. 622-625, 2124-2125 and 2178-2179.

[68]Adams, letter (July 27, 1959).

[69]Adams, "New Population Estimates...". The data are adjusted a slight bit because the total population for mid-1948 as shown in Miss Adams' paper (19,137,000) differs slightly from that used in this study (19,142,000). The former figure was obtained by comparing the 1948 Census total with the total from the PSSH data and the latter by applying the annual rate of growth between the 1939 and 1948 Censuses. Although young persons seem to have been under-enumerated in 1948 there were offsetting factors, such as the overestimation of the population in areas not completely enumerated because of civil disorders, and it is believed that the total is reasonably accurate (Adams, letter (July 27, 1959)).

The same source is used for the 1956 figures and the data for 1938 are the Census results adjusted to a mid-1938 basis.[70]

For funeral services the number of deaths is used. These are calculated by applying estimated death rates of 25.5, 20.2 and 14.2 per thousand persons to the mid-year populations of 1938, 1948 and 1956 respectively.[71]

The indicator for laundry services is the population of Metropolitan Manila. The 1938 and 1948 figures are from the Censuses[72] adjusted (1) for comparability with the 1956 definition of Metropolitan Manila[73] and (2) to a mid-1938 and mid-1948 basis. For 1956, the figure is obtained by extrapolating the household population of Metropolitan Manila in November, 1958 (1,984,000),[74] as derived from the Philippine Statistical Survey of Households, back to mid-1956 at the estimated rate of population growth for the Philippines as a whole (2.4% between 1956 and 1957 and 2.95% between 1957 and 1958),[75] with a rough allowance for persons not covered in the Survey.

For restaurants, bars and refreshment parlors a simple index of alcoholic beverage consumption is constructed. Domestic consumption of

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[70]The mid-1938 population (15,849,000) is calculated from the annual rate of growth between the 1939 Census and the 1948 Census. (For the 1939 total, and sex and age details, see Census...1939...Population and Agriculture, p. 111 and for the 1948 Census total, Census...1948...Population, p. 67).

[71]United Nations, Department of Economic and Social Affairs, Future Population Estimates by Sex and Age, Report III, The Population of Southeast Asia (including Ceylon and China: Taiwan), 1950-1980, pp. 12-15 presents two different sets of death-rate estimates based on different assumptions. The data used in this study are a compromise between the two sets. Official death-rate figures in the Philippines suffer from under-reporting to an unknown but varying degree (Ibid., p. 14).

[72]The figures also can be found in University of Chicago, Philippine Studies Program, Area Handbook..., Vol. I, Table VII-16. They show populations of 909,200 and 1,450,000 on the Census dates.

[73]This involves subtracting the population of Las Pinas, Malabon, and Novatas from the 1939 and 1948 figures. The amounts subtracted were 61,000 in 1939 and 85,000 in 1948 (Commonwealth of the Philippines, Census Office, Census of the Philippines, 1939, Special Bulletin No. 1, Population by Provinces and Municipalities as of January 1, 1939, p. 8 and Census...1948...Population, pp. 22 and 26).

[74]Letter to the writer from Elpidio D. Makanas, Acting Chief, Division of Surveys, Bureau of the Census and Statistics, Republic of the Philippines (June 17, 1960).

[75]Adams, "New Population Estimates...," p. 6.

distilled, rectified and blended liquors on the one hand, and fermented beverages on the other, is obtained for each of the three years by combining domestic production and net imports. Fermented beverage consumption is given twice the weight of other alcoholic beverage consumption as an approximate indication of the relative importance of each to the net value product of restaurants, bars and refreshment parlors in 1956. The 2:1 ratio was derived from an examination of the values of production, net imports and taxes for the two kinds of beverages.

The number of persons usually occupied as photographers serves as the indicator for photographic services. The figure for 1956 is a rough estimate obtained by assuming that the rate of growth in the number of photographers as compared to the rate of growth in total population was somewhat greater between 1948 and 1956 than between 1938 and 1948.

VIII. COMMERCE

The real product of commerce is measured by the indicator for all other industries; that is, commerce real product is assumed to behave the same as the total for all other industries. Both the weighting and indicator data necessary for a more refined treatment are simply not available. For the same reason any evaluation of the suitability of the imputed indicator is necessarily limited.

Industries other than agriculture and manufacturing account for only a small part of commercial activity but, on the other hand, a substantial portion of commercial activity is not reflected in the real product data for agriculture and manufacturing, that portion being the acquisition and distribution of imported consumer and capital finished goods.[76] The real product in industries aside from agriculture and manufacturing increased by 32% from 1948 to 1956 after an identical increase between 1938 and 1948, and in 1956 the real product was 75% above prewar.[77] The volume of imports as a whole apparently declined by more than 10% in the post war period after increasing by over 100% between 1938 and 1948, thus putting the 1956 level about two-thirds above prewar.[78] It is probable that the volume of

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[76]Most importing of other goods is probably done directly.

[77]See Table I-1.

[78]The changes in imports are calculated from quantum indexes in United Nations, Statistical Office, Yearbook of International Trade Statistics, 1954, p. 431 and Central Bank, Statistical Bulletin, VIII (December, 1956), Table 68. A figure for 1938 is not available so an estimate was made by the writer from the quantum for 1937 and the values for 1937 and 1938.

consumer and capital finished goods imports increased by more than the total between 1938 and 1948 but by less than the total during the postwar period[79] and between 1938 and 1956.

The conclusions indicated by this evidence are, assuming the indicators for the other industries to be accurate, that the indicator for commerce understates the growth of real product between 1938 and 1948 and overstates it in the postwar period and between 1938 and 1956. When biases in the other indicators are taken into account the understatement between 1938 and 1948 becomes greater and the overstatement in the postwar period and between 1938 and 1956 less. In several respects the evidence is incomplete. No account is taken of the possibility of commercial activity not being proportional to the net value product weights within agriculture and manufacturing and within the other industries and to the value weights in the import index. It is assumed also that changes in the real product of other industries and in the volume of imports accurately reflect changes in the real product of commerce, i.e., that the comparative real product for individual commodities in agriculture and manufacturing accurately indicates the comparative commercial activity associated with the commodities and that differences in the growth of commodities to which different amounts of commerce real product are added were insignificant or offsetting.

It should be pointed out that the probable errors in the indicator for commerce do not have too great an effect on comparative aggregate real product. Even if the growth of commerce is 50% in error, which is unlikely, the error in the aggregate would be only 8 or 9%, since commerce accounted for less than 20% of total net value product in 1956.[80]

IX. DWELLING SERVICES

Table III-13 shows the indicators for dwelling services, which are the number of dwellings by type of construction materials. The 1956 figures are from the Philippine Statistical Survey of Households and the 1938 and 1948 figures are from the Censuses of Population. To improve the comparability slightly all data have been converted to a mid-year basis, with total population as the extrapolator.

The possibility of errors in the 1956 figures from the Survey has been mentioned previously.[81] In 1948 the number of dwellings constructed of "other

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[79]This includes consideration of the large amount of surplus property finished goods acquired by the Philippines in 1947 which probably had a significant effect on commercial activity in 1948.

[80]See Table I-1. This allows for the understatement in the commerce net value product.

[81]See the section on dwelling services in Chapter II.

TABLE III-13

INDICATORS OF THE REAL PRODUCT IN DWELLING8SERVICES IN THE PHILIPPINES, 1938, 1948 AND 1956

Industry	Net Value Product, 1956	Indicators 1938	1948	1956	Specifications
DWELLING SERVICES	491.1				
Dwellings constructed of strong materials	152.5	148	125	443	Thousand dwellings
Dwellings constructed of mixed materials	170.9	694	656	1,075	Thousand dwellings
Dwellings constructed of light materials	164.4	2,141	2,001	2,196	Thousand dwellings
Dwellings constructed of other materials (a	3.3	131	702	93	Thousand dwellings

SOURCES: Table II-18 for the net value product in 1956 and Appendixes III-1 and III-2 for the indicators.

NOTES: (a Includes dwellings for which the materials were not reported.

materials" is quite large relative to the other two years. For all three years this category includes dwellings for which the type of materials was not reported, and the unusually large figure in 1948 could mean that a number of dwellings of strong, mixed, or light materials were not reported as such in that year. However, there is another more probable explanation which supports the accuracy of the figures. The 1948 Census reports some 124,000 improvised or temporary shelters as part of the "other materials" category, but in view of the civil disorders and the housing shortage of the postwar period many more may have been in use and not formally reported as temporary or improvised dwelling. Indeed, these kinds of dwellings are more likely to have been unclassified than those of strong, mixed or light materials as the latter are defined in the Censuses and the Survey.

X. CONCLUSION

In addition to being affected by the quality of the basic data the reliability of the indicators is influenced by the suitability of the various types of single indicators as substitutes for the double indicator and by the accuracy with which the indicators measure the real product of weight classes to which they do not precisely correpond. Table III-14 shows the net value product in 1956 covered by each type of indicator by industry and Table III-15 shows the net value product of each industry by type of indicators covering it. Altogether there are 134 separate indicators aside from the imputed type: 49 for agriculture, forestry and fishing; 6 for mining and quarrying; 31 for manufacturing; 3 for construction; 15 for transportation and other utilities; 26 for services; 0 for commerce; 4 for dwelling services; and 0 for production not included elsewhere. The percentage of aggregate net value product covered by each type of indicator is: output, 36.8%; labor input, 12.7%; stock of capital, 9.6%; raw material input, 7.9%; other direct indicators, 9.9%; and imputed, 23.1%.

Most of the net value product covered by output indicators is in agriculture, forestry and fishing and manufacturing. At the same time output indicators are the single most important type for these two industries and for mining and quarrying, and of substantial importance for transportation and other utilities and services.

The use of output comparisons as substitutes for real product comparisons involves the least error when the production coefficient (the ratio of commodity inputs to output, both expressed in base-year prices) shows little change over time or is low in value. The latter requirement is met in industries accounting for a good portion of the net value product covered by output indicators - all crops (except sugarcane for which a different type of indicator is used); the raising of carabaos; timber production; fishpond and municipal and sustenance fishing; mining (except limestone); electric energy production and distribution; and probably postal and telegraph communications and education and funeral services. The same is true in the handling of overseas cargo for which an output indicator is used in part. Remaining are the raising of livestock apart from carabaos; commercial fishing; various manufacturing industries;

TABLE III-14

NET VALUE PRODUCT IN 1956 COVERED BY EACH TYPE OF REAL PRODUCT INDICATOR BY INDUSTRY COVERED

Type of Indicator and Industry	1956 Net Value Product Covered, by Type of Indicator by Industry (million pesos) (1)	Percentage of the Net Value Product Covered by Each Type of Indicator, by Industry (2)
Output	3,165.7	100.0
Agriculture, forestry & fishing	2,042.4	64.5
Mining & quarrying	119.8	3.8
Manufacturing	511.4	16.2
Construction	110.0	3.5
Transportation & other utilities	98.2	3.1
Services	283.9	9.0
Labor input	1,090.1	100.0
Manufacturing	151.5	13.9
Transportation & other utilities	4.0	0.4
Services	934.6	85.7
Stock of capital	828.2	100.0
Agriculture, forestry & fishing	251.8	30.4
Transportation & other utilities	85.3	10.3
Dwelling services	491.1	59.3
Raw material input	676.6	100.0
Agriculture, forestry & fishing	59.1	8.7
Manufacturing	396.0	58.5
Construction	165.0	24.4
Services	56.5	8.4
Stock of capital & labor input linked	194.4	100.0
Transportation & other utilities	194.4	100.0
Indicator nil in two years	168.0	100.0
Agriculture, forestry & fishing	35.2	21.0
Manufacturing	132.8	79.0

TABLE III-14
(continued)

Type of Indicator and Industry	1956 Net Value Product Covered, by Type of Indicator by Industry (million pesos) (1)	Percentage of the Net Value Product Covered by Each Type of Indicator by Industry (2)
Output & miscellaneous linked	30.0	100.0
Transportation & other utilities	30.0	100.0
Miscellaneous	459.4	100.0
Agriculture, forestry & fishing	164.5	35.8
Mining & quarrying	5.1	1.1
Manufacturing	39.0	8.5
Construction	144.8	31.5
Transportation & other utilities	22.5	4.9
Services	83.5	18.2
Imputed	1,983.9	100.0
Agriculture, forestry & fishing	45.4	2.3
Mining & quarrying	14.6	0.7
Manufacturing	251.4	12.7
Transportation & other utilities	25.7	1.3
Services	131.1	6.6
Commerce	1,321.1	66.6
Production not included elsewhere	120.9	6.1
Aggregate net value product	73.7 (a	3.7

SOURCES: Chapters II and III *passim.*

NOTES: (a Refers to the indirect taxes not assigned to an industry.

TABLE III-15

NET VALUE PRODUCT FOR EACH INDUSTRY IN 1956 BY TYPE OF REAL PRODUCT INDICATOR COVERING8IT

Industry and Type of Indicator	Number of Direct Indicators (1)	1956 Net Value Product, by Industry by Type of Indicator Covering It (million pesos) (2)	Percentage of the Industry Net Value Product Covered, by Type of Indicator (3)
Agriculture, forestry & fishing	49	2,598s4	100.0
Output	38	2,042.4	78.6
Stock of capital	4	251.8	9.7
Miscellaneous	2	164.5	6.3
Raw material input	4	59.1	2.3
Imputed	-	45.4	1.7
Indicator nil in two years	1	35.2	1.4
Mining & quarrying	6	139.5	100.0
Output	5	119.8	85.9
Imputed	-	14.6	10.5
Miscellaneous	1	5s1	3.7
Manufacturing	31	1,482.1	100.0
Output	9	511.4	34.5
Raw material input	7	396.0	26.7
Imputed	-	251.4	17.0
Labor input	9	151.4	10.2
Indicator nil in two years	4	132.8	9.0
Miscellaneous	2	39.0	2.6
Construction	3	419.8	100.0
Raw material input	1	165.0	39.3
Miscellaneous	1	144.8	34.5
Output	1	110.0	26.2
Transportation & other utilities	15	460.1	100.0
Stock of capital & labor input linked	4	194.4	42.2
Output	6	98.2	21.3
Stock of capital	2	85.3	18.5
Output & miscellaneous linked	1	30.0	6.5
Imputed	-	25.7s	5.6
Miscellaneous	1	22.5	4.9
Labor input	1	4.0	0.9

TABLE III-15
(continued)

Industry and Type of Indicator	Number of Direct Indicators (1)	1956 Net Value Product, by Industry by Type of Indicator Covering It (million pesos) (2)	Percentage of the Industry Net Value Product Covered, by Type of Indicator (3)
Services	26	1,489.7	100.0
Labor input	13	934.6	62.7
Output	9	283.9	19.1
Imputed	-	131.1	8.8
Miscellaneous	3	83.5	5.6
Raw material input	1	56.5	3.8
Commerce	-	1,321.1	100.0
Imputed	-	1,321.1	100.0
Dwelling services	4	491.1	100.0
Stock of capital	4	491.1	100.0
Production not included elsewhere	-	120.9	100.0
Imputed	-	120.9	100.0
AGGREGATE NET VALUE PRODUCT	134	8,596.4	100.0
Output	68	3,165.7	36.8
Imputed	-	1,983.9	23.1
Labor input	23	1,090.1	12.7
Stock of capital	10	828.2	9.6
Raw material input	13	676.6	7.9
Miscellaneous	10	459.4	5.3
Stock of capital & labor input linked	4	194.4	2.3
Indicator nil in two years	5	168.0	2.0
Output & miscellaneous linked	1	30.0	0.3

SOURCES: Chapters II and III *passim.*

the construction of houses by owner-occupants; and rail and air transportation. For just about all of the manufacturing industries - distilled liquors, fermented beverages, tobacco products, sawmill and planing mill products, vegetable oils, and cement - the ratio of raw materials to output is likely to have remained relatively fixed because of the nature of the output. The same is probably true of own-account house construction since most dwellings in the Philippines are of more or less standardized construction and have not changed over the years. There may have been a tendency in manufacturing towards increased economy in the use of commodity inputs aside from raw materials but these are not important to the total. The production coefficients for livestock raising, commercial fishing, and sugar manufacturing may have varied a bit, although not necessarily in a fixed direction. In the case of rail and air transportation a definite trend in production coefficients did occur, this in a downward direction because of fuel economies arising from the introduction of diesel units in railroad operations and newer planes in air transportation.

For almost all the industries for which output indicators are used the indicators and the weights are practically co-extensive in coverage. The exceptions are crops, which have various degrees of coverage, and sawmill and planing mill products.

In all but a few of the industries - mining, education services, and cement perhaps being the exceptions - apparently homogeneous output is used for what are really commodities of different grades, varieties, quality, etc., i.e., commodities actually carrying different amounts of real product per unit in 1956. This is inevitable unless countless indicators are to be used, but it does raise the possibility of error if the production of each of the various commodities in an artificially homogeneous group does not show roughly the same movement over time, or if there are not offsetting movements among the commodities.

Excluding imputed indicators, labor input indicators are the second most important type in terms of net value product covered. Most of the net value product covered by labor input indicators is in services for which this type is the dominant one. It also is used in transportation and other utilities, largely for 1938 and 1948, and in manufacturing.

The reliability of labor input as an indicator of comparative real product is impaired when changes in productivity take place. Productivity, as used in this study, is defined as the difference between output and commodity input, both valued in base-year prices, divided by the amount of labor input.[82] The criterion followed in considering output is the unit of quantity implied in the contract between buyer and seller.[83] Thus, in the

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[82] This is in contrast to the definition commonly used in productivity analysis *per se* - output divided by the amount of labor input.

[83] See W. B. Reddaway, "Movements in the Real Product of the United Kingdom, 1946-1949," *Journal of the Royal Statistical Society*, Series A (General), CXIII (Part IV, 1950) 437.

case of health services for example, the implied measure of output is the number of visits or the number of cases. Labor input is considered in terms of man-hours on the job. For a given industry productivity may change over time because of a difference in the labor input required for a given amount of real product, or because of a shift in output among commodities requiring different amounts of labor input for a given amount of real product, or because of a shift in the composition of the labor input.

Changes in productivity are likely to have occurred, for one or more of the reasons stated, in a good many of the industries for which labor input indicators are used. Most of the manufacturing covered by this type of indicator is relatively new in the Philippines and it is probably accurate to say that the early stages of industries are characterized by increasing productivity. Labor productivity in TPU bus transportation undoubtedly declined between 1938 and 1948 as many of the busses in the postwar period, built on jeep bodies, were similar than the prewar vehicles. In the case of health services, productivity probably increased because the supply of health personnel could not be expanded as rapidly as the demand for their services once the services became availabled For the other industries the direction of the productivity changes, to the extent they did occur, is uncertain.

In the manufacturing industries for which labor input indicators are used and in road transportation, government, and domestic services the coverage of the indicators and the base-year weights is about the same. In health, business, religious, and photographic services the indicators are incomplete in coverage as compared to the weights, but they do cover quite a bit.

Common to all the labor input indicators is the fact that they do not refer precisely to labor input. With few exceptions the number of persons whose usual occupation is in the industry rather than the number of man-hours at the job serves as the indicator. The two differ, in their behavior over time, by changes in (1) the number of persons employed in the industry secondarily, their usual occupation being elsewhere, and the time they spend on the secondary job during the year and (2) the time actually spent at the job during the year by those usually occupied in the industry. Not much evidence is available to specify the magnitude of the differences but it does seem reasonable to conclude that in most instances the imprecision of the labor input data is not a major source of error. According to the Philippine Statistical Survey of Households the median weekly time worked by persons employed in domestic service in 1956-1957 was over 50 hours with about 80.0% working more than 40 hours.[84] Thus, for most domestic servants their job is full-time during the week and, as argued earlier in this chapter, there seems little reason to expect substantial within-the-year fluctuations in domestic service employment, nor is longer-term unemployment likely to be widespread in that field. In 1956 and 1957, for example, unemployment ranged around 4.0% of the labor force attached to domestic service,[85] which level is often considered the minimum probable

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[84] PSSH Bulletin, Series 3, Table 13-16.

[85] Ibid., Tabled7.

for any industry. Government, health service with the exception of midwives, business, religious, and probably photographic services, are also full-time jobs on the whole, with little short-term fluctuations in employment and long-term unemployment. With the exception of printing and publishing the manufacturing industries for which labor input indicators are used are dominated by large establishments, which presumably employ mostly full-time personnel. And, as was argued earlier in this chapter, since the industries were in general new and growing there is little reason to expect much long-term unemployment to have existed in any of the years. The industries are not seasonal in character either. Only in the case of road transportation is the accuracy of the more imprecise measure of labor input really doubtful.

The net value product of dwelling services is covered exclusively by capital stock indicators. This type is also used for the products of livestock raising and is quite important in transportation and other utilities, especially for the postwar period.

As with labor input indicators, the suitability of capital stock indicators is impaired to the extent that the productivity of the capital changes over timed In the case of dwellings, productivity is likely to remain practically fixed except for a change in composition within dwelling classes, which is most likely to occur with dwellings of strong and mixed materials. But fixed productivity is less characteristic of the other types of capital. In motorized road and internal water transportation and telephone communications, for which capital stock indicators are used in whole or in part,[86] idle capacity is typical by the very nature of the industries. Equipment is not always in operation and even when operating may be utilized less than fully. The existence of idle capacity is compounded in the Philippines by keen competition and a relative lack of regulation and control, especially in motorized road transportation.[87] However, it is not possible to say if there was any definite trend in the degree to which capacity was utilized except that the increase in the internal shipping indicator between 1938 and 1956 does seem low as compared to the increases in the domestic production of goods and in importsd In the case of the products of livestock raising, the real product per animal is subject to variation over the years. If there was any tendency it would have been in an upward direction; however, scientific livestock raising is not widespread in the Philippines.

In both transportation and livestock products the indicators are composed of diverse capital inputs with different productivity. Only in the case of internal water transportation, where just part of the traffic is measured, are the indicators limited to coverage.

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[86]It is assumed that telephone service is largely paid for by the call rather than by the telephone. If the latter were true, the indicator, the number of telephones, would be of the output type.

[87]See Stanford Research Institute, ...Water Transportation..., pp. 42-43 and ...Motor Vehicles, pp. 92-94.

Most of the net value product covered by raw material input indicators is in manufacturing where this type ranks second in importance to output indicators. It is also important in construction in addition to being used for livestock slaughtering and restaurant services.

Comparisons of raw material input are deficient in measuring comparative real product when change occurs in the ratio between real product and commoditydinputs, in the portion of the commodity inputs accounted for by the raw material used as the indicator, or in the portion of the raw material consumed by the industry for which the indicator is used.

The first type of change might occur because of a shift (1) in the ratio for individual goods or services, (2) in the relative importance of goods and services having different ratios, or (3) among inputs in an apparently homogeneous group of raw materials that actually have different amounts of product added to them. The industries for which raw material input is used as an indicator are relatively free of the first kind of shift, but livestock slaughtering, bakery products, textiles and finished textile products, products made largely of coconut oil, and private construction (aside from the construction of houses by owner-occupants, which is covered by a different kind of indicator) consist of quite diversified output, permitting varied real product to be added to given commodity inputs. And with livestock slaughtering, textiles and finished textile products, private construction, and restaurant services, raw materials with varied amounts of real product added to them are included in a single indicatord

For some of the industries covered by raw material indicators the indicators have about the same coverage as the base-year weights. These include livestock slaughtering and textiles and finished textile products. On the other hand, in milled rice and milled corn products, bakery products, products made largely of coconut oil, private construction, and restaurant services this correspondence does not exist. In the case of bakery products, there was probably a shift from the direct purchase of wheat flour by the consumer to its acquisition in the form of finished products and thus the growth in the real product of this industry is probably understated.

Also relevant to this type of indicator is the fact that the data do not refer to the raw material actually used but to the raw material available for use, i.e., production less net imports. In 1948 there was undoubtedly some replenishing of raw material stocks depleted or destroyed during the war. To the extent this did occur the indicators for the industries aside from livestock slaughtering and milled rice and milled corn products (raw materials here are perishable) are overstated in 1948 as compared to the other two years, since less of the available supply was used then.

Another factor perhaps affecting the indicators to some degree is that prior to 1940 the timing of imports was based upon their clearance through customs after all charges had been paid, whereas since then the timing of imports has been based upon their arrival in the Philippines.[88] The industries

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[88]United States, Department of Commerce, Foreign Commerce Yearbook, 1948, p. 520.

for which imports make up an important part of the raw material supply are bakery products, textiles and finished textile products and private construction.

The miscellaneous indicators employed are of several types. For export timber and desiccated coconut exports are used. These are akin to output indicators except that output and exports differ by the amount of inventory change. In neither of these industries are inventories important, however, and since the production coefficient is small in one case and relatively constant in the other, export comparisons do provide an accurate substitute for real product comparisons. The coverage of both indicators is practically complete. However, several varieties of timber are exported.

In the case of government construction, an index of the value of construction deflated by wage rates is the indicator. Here one requirement for accuracy is a similar movement over time of wage rates and construction prices. Evidence indicates that the unit costs of construction materials, and thus probably construction prices, increased more rapidly than wage rates between 1938 and 1948 and less rapidly than wage rates between 1948 and 1956. Between prewar and postwar wage rates doubled and the unit costs of construction materials would have had to increase substantially less than most prices in order to show a rise of only 100%. The evidence for the 1948-1956 period was discussed in the section on construction in Chapter II. This deficiency in the deflator means that the change in the real product of government construction between 1938 and 1948 is overstated and the change between 1948 and 1956 is understated. It is probable that the change between 1938 and 1956 is understated also. There is no indication of variations in production coefficients sufficient to eliminate these biases.

For motor vehicle repair, the handling of overseas water cargo (in 1948 and 1956), the handling of internal water cargo, and barbering, beauty care and laundry services, the potential market is used as the indicator. The main point here is how well potential market comparisons represent comparative sales, since in none of these industries are inventories at all significant and except for motor vehicle repair the production coefficients are either quite low or relatively fixed. There is little a priori reason for expecting widening divergence in a given direction to a large degree in these industries, although the possibility is greatest in the handling of internal cargo and in services, where the estimates of potential market probably differ most from actual sales.

For sugarcane and limestone the production of consuming industries provides the indicator. The main problems here are the possibilities of variations in the recovery of sugar from cane, changes in the portion of limestone used in cement production, and changes in the portion of commodity inputs in cement accounted for by limestone.

Imputed indicators are those in which the data for a related industry or group of industries are used to cover the net value product of a given industry. They are used when direct information is not available (e.g., in the case of commerce) or not necessary for accuracy (e.g., in the

case of crops, n.e.c.).[89] The most important imputed indicators are those used for manufacturing, not included elsewhere, and commerce. It will be recalled from earlier in this chapter that the imputed indicator for manufacturing, not included elsewhere, understates the growth in real product, especially between 1948 and 1956, and that the imputed indicator for commerce understates the growth in real product between 1938 and 1948 but overstates it between 1938 and 1948 on the one hand and 1956 on the other, with the overstatement in the postwar period being the greater.

One factor common to all the types of indicators is their failure to reflect quality changes, but this is not a significant weakness. In terms of real product measurement a quality change is defined as a variation in the nature of a good or service produced by given commodity inputs. That is, the change in the nature of the good or service must be such as to result in a different net value product per unit, expressed in base-year prices, of the good or service. A variation not affecting the price of the product, or even one which does affect the price of the product but which also changes the cost of commodity inputs per unit of output by the same amount, is not pertinent. For example, if the price of cement increases because it is more durable but the greater durability is solely due to more expensive ingredients, then there is considered to be no change in quality. Quality changes in the real product sense are much less frequent than quality changes in the output sense and are not likely to have too much effect on real product when they do occur. Since improvement in quality occurs more often than deterioration any biases which do exist in the indicators will be mostly downward.

On the basis of what has been said in this section and in the earlier portions of the chapter it can be concluded that, as far as indicator bias alone is concerned, the estimated growth in aggregate real product is fairly accurate for 1948-1956 and 1938-1956 but is biased downward in 1938-1948.

In the postwar period the understatement of the growth in manufacturing, not included elsewhere, the increased productivity in manufacturing and probably health services, the return to double sessions in public education, and the upward bias in the government construction deflator all contribute to a downward bias in the indicators as a whole. The understatement of crop and livestock real product in 1948 and the overstatement of the growth in commerce real product between 1948 and 1956 counteract this, however.

The downward bias for 1938-1948 is due to the deficiency in the manufacturing imputation and the lack of allowance for productivity changes again, and also to the understatement in crops and livestock in 1948 and in commerce growth between 1938 and 1948. Deficiencies in the government construction

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[89] Also, the indirect taxes and capital consumption allowances which are not broken down in as fine detail as the groups of industries to which they are assigned or allocated are, in effect, covered by imputed indicators; the comparative real product of each of the groups is assumed to be the same both before and after taxes and capital consumption allowances are considered.

deflator, the labor indicators for motorized road transportation, and the pupil attendance indicators for public education provide only a partial offset.

The indicators for manufacturing and health services for 1938-1956 show a downward bias once more, and the indicator for government construction probably shows one too. But this is balanced by the overstatement of growth in motorized road transportation, public education, and commerce.

A summary of the deficiencies in terms of their effects on the major industries shows the following. The indicators for agriculture contain an overall upward bias between 1948 and 1956 and one of the opposite direction between 1938 and 1948. Manufacturing growth is understated in all three periods. The construction indicators as a whole are biased downward between 1948 and 1956, upward between 1938 and 1948, and probably downward between 1938 and 1956. For transportation and other utilities upward bias exists in 1938-1948 and 1938-1956. For services as a whole there is an understatement of growth during the postwar period. In commerce the indicator is biased downward between 1938 and 1948 and upward between 1948 and 1956 and between 1938 and 19568

In this chapter and the last numerous tentative errors of uncertain direction have been called to the reader's attention. These are listed for the benefit of persons who make more detailed use of specific figures than the writer has done, and also in the hope that they can be more fully evaluated either when additional data become available or by persons more familiar than the writer with particular industrieso

However, it should be stressed that the significance to the measures prepared in this study of errors in the data does not lie in their absolute size but rather in their effect on the comparability of real product. Furthermore, all the errors listed as tentative do not necessarily exist in fact; even to the extent they do exist they can be expected to be at least partly offsetting both at the aggregate and industry levelso Legitimacy of results is the real test of statistical information.

APPENDIX III-1

LIST OF INDICATOR SOURCES

(1) Census...1939...Population and Agriculture.

(2) Census...1948...Agriculture.

(3) Maulit, letters (February 11 and April 13, 1960)8

(4) Estimated by the writer as explained in the text.

(5) This study.

(6) Bureau of the Census and Statistics, Foreign Trade...1948 and 1949.

(7) Bureau of the Census and Statistics, Foreign Trade...19568

(8) Central Bank, Annual Report, 1949.

(9) Central Bank, Statistical Bulletin, IX (December, 1957).

(10) Bureau of the Census and Statistics, Abstract of Philippine Statistics, I (July - December, 1951).

(11) Bureau of the Census and Statistics, Journal of Philippine Statistics, XII (January - March, 1959).

(12) Agricultural Economics Division, Philippine Agricultural Statistics, Vol. I.

(13) United Nations, Statistical Office, Statistical Yearbook, 1957.

(14) Philippine Council for United States Aid, Industrial Philippines...i

(15) Bureau of the Census and Statistics, Journal of Philippine Statistics, XI (October - December, 1958).

(16) Bureau of Customs, Annual Report...1938.

(17) R. L. Paguia, Administrator, Sugar Quota Administration, Department of Commerce and Industry, Republic of the Philippines, letter to the writer (February 4, 1960).

(18) Commonwealth of the Philippines, Bureau of Internal Revenue, Annual Report for the Fiscal Year Ended December 31, 1938.

(19) Census...1948...Population.

(20) Bureau of the Census and Statistics, Yearbook of Philippine Statistics, 1946.

(21) Central Bank, Annual Report, 19578

(22) 1956 Annual Survey of Manufactures, Vol. 1, Series 2.

(23) Bureau of the Census and Statistics, Journal of Philippine Statistics, VI (October - December, 1953).

(24) Bureau of the Census and Statistics, Journal of Philippine Statistics, X (July - September, 1957);

(25) United Nations, Statistical Office, Statistical Yearbook, 1955;

(26) United Nations, Statistical Office, Monthly Bulletin of Statistics, IV (April, 1950).

(27) Eleuterio Capapas, Commissioner of Customs, Republic of the Philippines, letter to the writer (February 23, 1960).

(28) United Nations, Statistical Office, Statistical Yearbook, 1956;

(29) United Nations, Statistical Office, Statistical Yearbook, 1954;

(30) Philippine Long Distance Telephone Company, Annual Report, 1957;

(31) Bureau of the Census and Statistics, Journal of Philippine Statistics, VII (January - March, 1954).

(32) Bureau of the Census and Statistics, Journal of Philippine Statistics, X (April - June, 1957).

(33) Bureau of Telecommunications, Annual Report...1955 to...1956.

(34) Bureau of Telecommunications, Annual Report...1956 to...1957;

(35) Romero, letter (March 8, 1960).

(36) Bureau of the Census and Statistics, Journal of Philippine Statistics, XII (April - June, 1959).

(37) University of Chicago, Philippine Studies Program, Area Handbook..., Vol. II.

(38) Commonwealth of the Philippines, Bureau of Education, Annual Report for the Fiscal Year Ended December 31, 1938;

(39) Bureau of Education, Annual Report...1939.

(40) Bernardino, letter (August 11, 1959);

(41) Republic of the Philippines, Bureau of Public Education, Annual Report for the Fiscal Year Ended June 30, 1948;

(42) Bobis, letter (August 25, 1959).

(43) Trinidad, ...National Income Accounting....

(44) Adams, "New Population Estimates...".

(45) University of Chicago, Philippine Studies Program, Area Handbook..., Vol. I.

(46) Census...1939, Population by Provinces and Municipalities....

(47) PSSH Bulletin, Series 2.

APPENDIX III-2

INDICATOR SOURCES BY INDUSTRY

	1938	1948	1956
AGRICULTURE, FORESTRY AND FISHING			
Crops	(1) 1168-1171	(2) 2706 & 2708	(3)
Exceptions:			
Copra	(1) 1300	(2) 2989	
Coconuts not used for copra	(1) 1304-1306	(4)	
Sugarcane	(4)	(4)	(4)
Virginia tobacco	(4)	(4)	
Livestock raising & its products	(5) T.III-2	(5) T.III-2	(5) T.III-2
Livestock slaughtering	(5) T.III-2	(5) T.III-2	(5) T.III-2
Forestry			
Export timber	(4)	(6) 185 & 187	(7) 333-334
Domestic timber	(4) & (8) T.32	(6) 185 & 187 & (9) T.76	(7) 333-334 & (9) T.76
Fishing			
Commercial fishing	(10) 49	(11) T.81	(11) T.81
Fishponds	(10) 49	(4)	(4)
Municipally licensed & sustenance fishing	(4)	(4)	(4)
MINING AND QUARRYING			
Gold	(12) T.134	(9) T.77	(9) T.77
Copper	(13) T.45	(13) T.45	(13) T.45
Chromite	(13) T.50	(13) T.50	(13) T.50
Iron	(13) T.44	(13) T.44	(13) T.44
Coal	(14) T.88	(9) T.80	(9) T.80

	1938	1948	1956
MINING AND QUARRYING (cont'd)			
Limestone	(13) T.108	(15) T.33	(15) T.33
MANUFACTURING			
Food, manufactured			
Milled rice products	(1) 1169	(2) 2706	(3)
Milled corn products	(1) 1169	(2) 2706	(3)
Bakery products	(16) 134 & 338	(6) 17 & 202	(7) 55
Centrifugal sugar mill & sugar refinery plant products	(17)	(17)	(17)
Muscovado & panocha	(12) T.64	(12) T.64	(3)
Desiccated coconut	(16) 314	(6) 163	(7) 315
Beverages			
Distilled, rectified & blended liquors	(18) 43	(9) T.79	(9) T.79
Fermented beverages	(18) 45	(9) T.79	(9) T.79
Soft drinks & carbonated water	(4)	(19) 450-453	(4)
Tobacco products			
Cigarettes	(18) 51	(9) T.78	(9) T.78
Cigars	(18) 48	(9) T.78	(9) T.78
Textiles & finished textile products	(5) T.III-5	(5) T.III-5	(5) T.III-5
Wood products except furniture			
Sawmill & planing mill products	(12) T.129	(9) T.76	(9) T.76
Plywood & veneered panels	(4)	(19) 468-469	(4)

	1938	1948	1956
Paper & paper products			
Articles of paper, pulp & paperboard	(4)	(19) 474-475	(4)
Printed & published materials & allied products			
Newspapers, magazines & periodicals	(4)	(19) 500-503	(4)
Printed & published materials & allied products, n.e.c.	(4)	(19) 502-505	(4)
Chemicals & chemical products			
Vegetable oils	(20) T.169	(8) T.27	(21) 32
Products made largely of coconut oil	(20) T.169 & (16) 320	(8) T.27 & (6) 163-164	(21) 32 & (7) 315
Medical & pharmaceutical preparations	(4)	(19) 478-479	(4)
Paints, varnishes & lacquers	(4)	(19) 476-477	(4)
Products of petroleum & coal	(4)	(4)	n.e.
Non-metallic mineral products, except products of petroleum & coal			
Glass containers	(4)	(19) 480-481	(4)
Cement	(13) T.108	(15) T.33	(15) T.33
Basic metal products & other metal products, except machinery & transportation equipment			
Miscellaneous primary metal industry products	(4)	(4)	n.e.
Fabricated wire products	(4)	(4)	(22) 40

	1938	1948	1956
Basic metal products & other metal products, except machinery & transportation equipment (cont'd)			
Metal shipping barrels, drums, kegs & pails	(4)	(4)	n.e.
Transportation equipment			
Motor vehicles except combat vehicles & motorcycles	(4)	(4)	n.e.
Motor vehicles & cycles, repaired	(23) T.47	(23) T.47	(24) T.28
CONSTRUCTION			
Government construction	(5) T.III-7	(5) T.III-7	(5) T.III-7
Non-commercial construction	(5) T.III-8	(5) T.III-8	(5) T.III-8
Other private construction	(5) T.III-9	(5) T.III-9	(5) T.III-9
TRANSPORTATION AND OTHER UTILITIES			
Transportation			
Railroad	(25) T.134	(26) T.45	(13) T.138
Road, motorized	(5) T.III-11	(19) 514-521	
		(10) T.75	(24) T.78
Exception:			
TH truck operators		(4) (10) T.75	
Road, non-motorized	(1) 503	(19) 516-519	(4)
Water			
Internal shipping	(16) 371	(27)	(27)
Handling of internal cargo	(16) 371	(27)	(27)
Handling of overseas cargo	(16) 366	(27)	(7) 9 (27)

	1938	1948	1956
Air	(28) T.143	(29) T.140	(13) T.144
Communications			
Telephone	(30)	(30) & (31) T.44	(32) T.34
Telegraph, government-operated	(31) T.44	(31) T.44	(33) 50 & (34) 1
Posts	(4)	(35)	(36) T.43
Electric energy production & distribution	(13) T.124	(29) T.121	(13) T.124
SERVICES			
Government services			
Armed forces	(4)	(19) 608-613	(4)
Other government services	(4)	(4)	(4)
Community services			
Education			
Private education	(20) T.18 & (4)	(37) T.X-9	(32) T.24 & (15) T.54
Public education	(38) T.13 & (39) T.3	(40) & (41) T.7	(40)
Exception:			
Collegiate	(38) T.13, (39) T.3 & (20) T.20	(40), (41) T.7 & (42)	(40) & (42)
Health services	(1) 497 & (4)	(19) 424-697	(43) 97-98
Religious services	(1) 497	(19) 670-671	(4)
Business services	(1) 497 & (4)	(19) 424-705 & (4)	(5) T.II-17
Personal services			
Domestic services	(4)	(19) 622-625	(4)

	1938	1948	1956
Personal services (cont'd)			
Restaurants, bars & refreshment parlors	(5) T.III-4 & (16) 268-269, 325 & 345-346	(5) T.III-4 & (6) 34-35, 166 -167 & 209	(5) T.III-4 & (7) 73 & 317
Barbering	(1) 111	(19) 67	(44)
Beauty care	(1) 111	(19) 67	(44)
Photographic services	(1) 497	(19) 500-707	(4)
Funeral services	(4)	(4)	(4)
Laundry services	(45) T.VII-16 & (46) 8	(45) T.VII-16 & (19) 22 & 26	(4)
DWELLING SERVICES	(1) 892	(19) 2253	(47) T.22

NOTE: The figures in parentheses refer to the numbers of the sources in Appendix III-2.

CHAPTER IV

COMPARISON OF THE ESTIMATES OF THIS STUDY WITH THE OFFICIAL DATA ON PHILIPPINE REAL PRODUCT

The changes in real product indicated by the estimates of this study differ somewhat from those reflected in the official data on Philippine real product. Officially, the average rate of growth in aggregate real product per annum comes to 7.2%[1] as contrasted to the slightly more than 6.5% obtained here. Table IV-1 shows the discrepancies by industry division.[2]

A priori the estimates of this study can be expected to be the more accurate because they were prepared in more detail than the admittedly rough official figures. But there is also some direct evidence of inaccuracies in the latter.[3] A complete analysis of the official figures is not possible, however, because of the very fact that they are limited in detail.

In services (including government, dwelling services, and production not included elsewhere) the official data on real product show an increase of 71% as contrasted to a bit more than 34% in the new estimates. Officially the real product is obtained by deflating the national income from services as a whole, expressed in current values, by the consumer price index.[4] Both the values being deflated and the deflator must be considered suspect. For example, the official national income from personal services in current-value terms shows an increase of 106% between 1948 and 1956,[5] but there is nothing in the economy of the postwar Philippines to indicate that such a large rise did indeed occur. As regards the deflator, it shows a decline of

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[1]Calculated from Trinidad, "...Output at Constant Prices," Table 3.

[2]No comparison of the results as regards real expenditure by type is attempted because both sets of estimates are too rough to make it fruitful. (The official figures can be found in Trinidad, "...Output at Constant Prices," Table 6.)

[3]Some of the points which follow are discussed by Trinidad (see "...Output at Constant Prices," p. 31) but primarily in general terms without reference to specific industries.

[4]The methods used to obtain the official estimates are explained in Trinidad, "...Output at Constant Prices," pp. 27-29.

[5]"The National Accounts...," Statistical Reporter, III (April, 1959) Table II.

5%,[6] whereas the evidence shows at least some increases in the actual prices of services. During the postwar period, for example, a minimum wage was applied to government employees, the pay scales of personnel in public education were raised, and it is likely that the costs in private education increased also.

TABLE IV-1

COMPARISON OF THE PERCENTAGE CHANGES BETWEEN 1948 AND 1956 SHOWN BY THE NEW AND THE OFFICIAL ESTIMATES OF PHILIPPINE REAL PRODUCT BY INDUSTRY

	New Estimates[a] (percentage change, 1948-1956) (1)	Official Estimates[b] (percentage change, 1948-1956) (2)
TOTAL FOR THE PHILIPPINES	66.0	74.6
Agriculture, forestry & fishing	90.3	64.7
Mining & quarrying	300.0	219.0
Manufacturing	139.1	161.4
Construction	-7.1	8.3
Transportation & other utilities	55.0	64.9
Commerce	66.0	57.1
Services	34.0	70.8
Indirect taxes	(c	122.7
Capital consumption allowances	(c	57.4

SOURCES: (1): Table I-1.

(2): Computed from Trinidad, "...Output at Constant Prices," Table 3.

NOTES: a) 1956 prices.
b) 1955 prices.
c) Included in the industry figures.

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[6]Trinidad, "...Output at Constant Prices," Table 2.

In construction and transportation and other utilities the official real product figures again show the larger increases, 8% and 65% as contrasted to perhaps a slight decline and a rise of 55%. For these industries current values are deflated by the wholesale price index, which fell by 11%.[7] In Chapter II it was argued that the series used as extrapolators of the 1948 benchmark data probably understate the growth of the official net value product in current-value terms in both industries. Thus, in order for the larger increases shown by the official real product estimates to be accurate the deflator would have to contain the same downward bias, which it would if the prices in construction and transportation and other utilities actually showed little change between 1948 and 1956. Evidence in the section on construction in Chapter II suggests that, in the case of construction, a downward bias in the deflator does exist but also that it is too large. This deficiency could very well apply in the case of transportation and other utilities also. Data are lacking, but it is difficult to imagine that prices in the industry did not show some rise between 1948 and 1956.

Manufacturing expanded by 161% according to the official data as compared to somewhat over 140% accordingdto this study. Unfortunately details of the official manufacturing net value product in either current or constant prices are not available for 1948, so no evaluation of the official figures is possible aside from some general comments. In the description of the official estimates it is stated that a physical volume index is used to measure the real product of manufacturing.[8] But, in this index, only the years from 1952 on are actually covered by a physical volume series; for earlier years the deflated income originating for manufacturing as a whole is used.[9] Both portions must be considered of uncertain reliability. The physical volume series is based on data from establishments whose production movements may not be representative of manufacturing as a whole. The establishments were not selected beforehand; they consist merely of that portion of the total number of manufacturing establishments which cooperated by responding to the questionnaires sent to them.[10] Also the weights used in the series are gross value product rather than net value product.[11] In the earlier series, deficiencies in the value of product estimates expressed in current prices and in the deflator may be responsible for error. Aside from the uncertain reliability of each portion of the index of manufacturing real product, the comparability of the two parts is also questionable.

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[7] Ibid.

[8] Ibid., p. 28.

[9] Central Bank, Statistical Bulletin, X (December, 1958) 11.

[10] Mrs. Fanny Cortes Garcia, letter to the writer (April 27, 1960). Adjustments are made for firms which respond one period and not the next. The list of manufacturers was revised in 1955 to include new firms, and a new index, linked to the old, was begun.

[11] Central Bank, Statistical Bulletin, X (December, 1958) 10-11.

Indirect taxes in the official figures are not distributed by industry; instead they are deflated as a separate category by the wholesale price index. Again the deflator must be considered faulty because indirect tax rates rose in the postwar period as contrasted to the fall in the wholesale price index.

Only in agriculture and mining do the official data show less growth than the revised estimates.[12] Officially agriculture and mining show rises of 65% and 219% as contrasted to 80%, or a little more, and 300% here. Production volume indexes are used for agricultural crops and mining; the contributions of livestock production, fishing and forestry are measured by deflating current-value figures with various price index components. Lack of detail precludes much discussion of the official agricultural data. The problems of deflation may again pertain. Some questions about the current-value data which are deflated were raised in Chapter II. There is also one point about the physical volume data that can be mentioned. The volume index for each group (e.g., fruits) is derived from the combined metric tonnage of the component crops (e.g., bananas, pineapples, etc.).[13] This means that physical weight rather than economic value determines the influence of the output of each crop on the group figures. In mining, while the evidence is incomplete, it appears that one fairly important reason why the growth is understated officially is that an increase in the quality of chromite ore is not allowed for.

In the official estimates of aggregate real product 1955 weights are used, but the criticisms made in Chapter II of the 1956 net value product data are still largely relevant since, in most cases, the same methods were used in both years as far as can be determined. The official figures for 1956 and the estimates of this study are compared in Table IV-2. To improve the comparability the official total is adjusted for the different manner in which indirect taxes and subsidies are measured here.[14] Also, the tax adjustments of Appendix II-1 are applied to the official estimates, as indirect taxes are not broken down by industry officially. Some differences in concept between the two sets of figures still remain, however. The official industry data do not include capital consumption allowances and income arising in the Philippines but accruing to the rest of the world. The exclusion of the latter is not significant since in 1956 it totaled only ₱ 23 million.[15] Some differences in classification will also be recalled - the broader coverage in this study of manufacturing as compared to forestry and mining and the narrower coverage of government as compared to other industries.

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[12]For commerce the growth shown by both sets of figures is approximately the same, after the upward bias in the result in this study is allowed for. Another item in the official estimates is the deflation of capital consumption allowances as a separate category, as with indirect taxes, by the wholesale price index, but the lack of data prevents any evaluation of the result.

[13]Trinidad, "...Output at Constant Prices," p. 27.

[14]See Appendix II-1.

[15]National income worksheets.

TABLE IV-2

COMPARISON OF THE NEW AND THE OFFICIAL ESTIMATES OF NET VALUE PRODUCT IN THE PHILIPPINES, 1956

	New Estimates (million pesos) (1)	New Estimates (per cent) (2)	Official Estimates (million pesos) (3)	Official Estimates (per cent) (4)
TOTAL	8,596	100.0	9,445[a]	100.0
Agriculture, forestry & fishing	2,598	30.5	3,316	37.1
Mining & quarrying	140	1.6	144	1.6
Manufacturing	1,482	17.4	1,386	15.5
Construction	420	4.9	284	3.2
Transportation & other utilities	460	5.4	302	3.4
Services	1,490	17.5	1,480	16.6
Commerce	1,321	15.5	1,315	14.7
Dwelling services	491	5.8	585	6.6
Production not included elsewhere	121	1.4	118	1.3
Capital consumption allowances	(b	(b	441	(c

SOURCES: (1): Table I-1.
(2): Computed from (1) with 100.0% actually equalling ₱ 8,596 million less ₱ 74 million of unallocated indirect taxes.
(3): "The National Accounts...," Statistical Reporter, II (April, 1958) 19 and 22, and Trinidad, ...National Income Accounting..., p. 100.

TABLE IV-2
(continued)

SOURCES: (4): Computed from (3) with 100.0% actually equalling ₱ 9,445 million lessd₱ 74 million of unallocated indirect taxes and ₱ 441 million of unallocated capital consumption allowances.

NOTES: (a Differs from the official total of ₱ 9,440 because of the different measurement of indirect taxes and subsidies in this study.
(b Included in the industry figures.
(c Not figured in the percentages.

Even after allowing for differences in concept and classification there are discrepancies between the two sets of weights in agriculture, forestry and fishing; dwelling services; manufacturing; construction; and transportation and other utilities.[16] For the first two the revised estimates are smaller than the official figures and for the others they are larger. It will be recalled from Chapter II that the official figures on agriculture, forestry and fishing contain two quite significant sources of upward bias - the application of large percentage adjustments that are obsolete to the livestock quantity data, and the use of wholesale and retail prices, largely from Manila, to value much of non-crop production. In the case of dwelling services, the official value of production obtained by extrapolation from 1948 is high when compared with more recent information, and in addition commodity costs are not deducted. Among the other industries, manufacturing in small establishments is incompletely covered and the same is true of own-account construction. Also, the 1948 benchmark income in both construction and transportation and other utilities is understated and probably the extrapolators are as well. The net effect of these various weighting deficiencies is to add to the upward bias attached to the growth of aggregate real product by the official indicators aloneo

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[16]The net value product of commerce is understated in both sets of figures.

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