AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D. C. 20523

BIBLIOGRAPHIC INPUT SHEET

FOR AID USE ONLY
Batch 67

1. SUBJECT CLASSIFICATION
A. PRIMARY: TEMPORARY
B. SECONDARY:

2. TITLE AND SUBTITLE
The Philippines; estimates of flows in the open, dualistic economy framework, 1949-1965

3. AUTHOR(S)
Paauw,D.S.

4. DOCUMENT DATE
1968

5. NUMBER OF PAGES
212p.

6. ARC NUMBER
ARC

7. REFERENCE ORGANIZATION NAME AND ADDRESS
NPA

8. SUPPLEMENTARY NOTES (Sponsoring Organization, Publishers, Availability)
(In Working paper M-9239)

9. ABSTRACT
(ECONOMICS R&D)

10. CONTROL NUMBER
PN-AAC-228

11. PRICE OF DOCUMENT

12. DESCRIPTORS

13. PROJECT NUMBER

14. CONTRACT NUMBER
Repas-9 Res.

15. TYPE OF DOCUMENT

AID 590-1 (4-74)

Repro-9
NPA PN-AAE-228

THE PHILIPPINES: ESTIMATES OF FLOWS IN THE OPEN, DUALISTIC ECONOMY FRAMEWORK, 1949-1965

Douglas S. Paauw

Draft Final Report: Data Section I

M-9239
February 1968

FOREWORD

This data paper presents our time series estimates of the aggregate economic flows for the open, dualistic economy of the Philippines. All estimates cover the period 1949-65, and all flows are valued in constant (1955) prices. Although some of the flows have been disaggregated, the basic focus is on the estimation of the flows shown in the Open Dualistic Economy National Income Framework, shown in Diagram I-1, page 5a.

The paper contains considerable detail on sources and methods behind the estimates, largely presented in the Appendices. Where major issues are involved, however, discussion of data problems is found in the text. In addition, estimates for each major nexus (foreign, production, income, and financial) are accompanied by a brief evaluation of that nexus' performance over the time span covered. For this purpose, growth rates and ratios among important aggregates have been computed and reproduced with the estimates. In general, however, the estimates and the related series presented here comprise the raw material for our more analytical studies of the growth of the Philippine open, dualistic economy. These latter studies are now in progress.

A word about the relative difficulties confronted in applying the different parts of the NPA open, dualistic economy framework to the Philippines data may be helpful. Foreign nexus estimates involved special difficulties in deriving a consistent constant price series for the 1949-65 period. Considerable effort was also required to disaggregate imports into the component flows identified by the framework, and it was necessary to utilize detailed original import records. Production nexus estimates were largely derived from the official National Economic Council national income estimates. However, estimates for intermediate goods payments by all three production sectors (industry, agriculture, and government) to other sectors involved resort to other sources of data. Collection of this data and their reconciliation with the national income accounting flows required several months.

We emphasize in the text that we have less confidence in the income nexus estimates than in those for the production nexus. Estimates of the disposition of the industrial and agricultural sectors' income between savings and consumption required our independently estimating aggregate and sector savings. The breakdown of each sector's consumption expenditures between spending on industrial and agricultural sector goods and services involved use of periodic household survey data, implying a very weak empirical basis for measuring annual changes. Cur

experience with attempting to estimate the financial nexus flows suggests that measurement of financial variables is likely to be particularly weak in less developed countries. Our own estimates of private sector savings, based on extension of Richard Hooley's estimates and requiring considerable original data work, are believed to be relatively accurate, and they are more or less supported by improved National Economic Council estimates recently published for the period 1962-66.

We believe Philippine data of the types required for applying our framework are relatively good in terms of data capabilities of less developed countries. Nevertheless, estimation of the aggregate flows in the NPA framework required a large investment of field work. On the other hand, it should be stressed that rough approximations of foreign, production, and financial nexus flows could have been derived with little difficulty.

The Philippine estimates will be followed by the statistical application of our framework to Thailand, covering the same time period. We believe that these efforts to organize data for two open, dualistic economies will be the first serious attempt to study and compare the statistical records of such economies over a significantly long period of time. These records will serve as the basic data frame for our forthcoming analytical and comparative studies on the growth of these economies.

All of the fieldwork and local investigation behind the estimates presented in this paper were conducted in the Philippines during the period from August 1965 to June 1967. In this tedious data work I am grateful for considerable assistance from my colleagues, Joseph Tryon and George Hicks. Much of the original data work for the estimates was done by my research assistant at the University of the Philippines, Casimiro V. Miranda, to whom I owe a large debt of gratitude.

I wish to acknowledge, above all, my gratitude for considerable assistance received from the University of the Philippines. Without a rewarding association with the School of Economics of the university, the work of the NPA Project in the Philippines would not have been possible. On innumerable occasions advice and guidance were provided by my excellent colleagues at the university, with whom I had the privilege to be associated for two years.

Douglas S. Paauw
February 1968

TABLE OF CONTENTS

I. MAJOR FEATURES OF THE OPEN-DUALISTIC ECONOMY APPROACH 1

A. General Methodology 1

B. The Empirical Framework 5

II. GENERAL EVALUATION OF DATA AND ESTIMATES . 15

III. THE ESTIMATES, 1949-1965 21

A. The Foreign Nexus 22
1. Exports, Imports, and Capital Flows 26
2. Foreign Sector Performance: Aggregate Level 37
3. Agricultural Versus Nonagricultural Exports 47
4. The Composition of Imports 52
5. The Foreign Nexus: Summary 66

B. The Production Nexus 68
1. Value Added Estimates: Sources and Methods 69
2. Reliability of Philippine National Account Estimates: Value Added Approach 74
3. Value Added Estimates: Results, 1949-1965 88
4. Other Production Nexus Flows 92
5. The Production Nexus: Performance at the Aggregate Level, 1949-1965 97

C. The Income Nexus 109
1. Income Nexus Inflow Estimates 109
2. Estimates of Sector Income Disposition . . . 114
3. Summary: Income Nexus Estimates 117
4. The Income Nexus: Performance 117

D. The Financial Nexus 128
1. Financial Nexus Estimates 128
2. Financial Nexus: Performance 133

E. Total Availability 144
1. Estimates 144
2. Import Substitution at the Aggregate Level . . 147

APPENDIX I: FOREIGN NEXUS: SUPPLEMENTARY DATA . . . . . A 1

APPENDIX II: ESTIMATES OF R, N, AND Y_g . . . . . A 9

APPENDIX III-1: DISAGGREGATION OF V_g INTO G_h AND G_L A14

APPENDIX III-2: ESTIMATION OF CONSUMPTION EXPENDITURES ON INDUSTRIAL AND AGRICULTURAL GOODS BY THE INDUSTRIAL AND AGRICULTURAL HOUSEHOLDS A21

APPENDIX IV: ESTIMATES OF PRIVATE SECTOR SAVINGS AND DEPRECIATION A28

APPENDIX V: THE NEC "NEW SERIES" ESTIMATES OF CONSUMPTION, SAVINGS, AND INVESTMENT A45

TABLES

I- 1 Accounting Variables in Open, Dualistic Economy Framework 12

III- 1 NEC Estimate of Foreign Nexus Variables, GNP, and Ratios in Current Prices, 1958-1961 28

III- 2 NEC Foreign Nexus Estimates in Constant (1955) Prices, 1958-1961 30

III- 3 Capital Flows in Current Dollar and Constant (1955) Peso Prices: NEC and NPA Estimates Compared . . 35

III- 4 NPA Estimates of Foreign Sector Variables, 1949-1965 36

III- 5 Philippine Export Ratio, 1949-1965: NEC Current and Constant (1955) Price Estimates and NPA Constant (1955) Price Estimate Compared 39

III- 6 Philippine Import Ratios: NEC Current and Constant (1955) Price Data and NPA Constant (1955) Price Series Compared 40

III- 7 Growth Rates: NPA Estimates of GNP and Foreign Nexus Variables, 1949-1965 45

III- 8 Growth Rates: Exports by Five-Year Periods . . . 45

III- 9 Disaggregation of Exports into Agricultural, E_x, and Nonagricultural, E_y, by Merchandise and Service Components, and Ratios of E_x and E_y to Total Exports, E, 1949-1965 50

III-10 Import Disaggregation (Merchandise Only): Comparison, NPA, Central Bank, ECAFE Estimate . 55

III-11 Disaggregation: Merchandise Imports, 1949-1965 . . 59

III-12 Disaggregation: Service Imports, 1949-1965 60

III-13 Disaggregation of Imports, by Merchandise and Service Components, 1949-1965 61

III-14 Imports: Total and by Composition; Agricultural (M_x), Finished Industrial Consumers' (M_y), Finished Capital (M_i), All Finished Industrial (M_E), and Intermediate (M_R), 1949-1965 62

III-15 Foreign Nexus: Juncture Balance, 1949-1965 67

III-16 Value Added, NEC Estimates, Old and New Series, 1962-1965 85

III-17 Agriculture: Gross Value Added, by Components, 1949-1965 89

III-18 Industry: Gross Value Added, by Component, 1949-1965 90

III-19 Gross National Product and Value Added Components by Agriculture (V_x); Industry (V_y); and Government (V_g), 1949-1965 91

III-20 Industry Production Sector: All Variables, 1949-1965 93

III-21 Agriculture Production Sector: All Variables, 1949-1965 94

III-22 Government Production Sector: All Variables, 1949-1965 95

III-23 Growth Rates: Value Added by Agriculture (V_x), Industry (V_y), and Government (V_g) and Gross National Product (GNP), 1949-1965, and by Subperiods 98

III-24 Annual Rates of Change in Gross Value Added by Sector and in Gross National Product 101

III-25 Ratios of Sector Gross Value Added to GNP for Agriculture, Industry, and Government, 1949, 1955, 1960, and 1965 102

III-26 Components of Total Agriculture Output Value (X), 1949-1965 104

III-27 Components of Total Industrial Output Value (Y), 1949-1965 106

III-28 Ratios of Agricultural Exports to Agricultural Gross Value Added (E_x/V_x) and Industrial Exports to Industrial Gross Value Added (E_y/V_y), 1949-1965 . 108

III-29 Income Nexus Inflows, by Sector, 1949-1965 . . . 113

III-30 Personal Income, Taxes, Disposable Income, Savings, and Consumption for Industry and Agriculture; Income, Savings, and Current Expenditures for Government, 1949-1965 116

III-31 Industrial Sector Consumption Expenditures (C_h) Disaggregated by Expenditures for Industrial Goods (Y_h) and Agricultural Goods (X_h) and Agricultural Sector Consumption Expenditures (C_L) Disaggregated by Expenditures for Industrial Goods (Y_L) and Agricultural Goods (X_L), 1949-1965 . . . 118

III-32 Income Nexus: Industry, All Variables 119

III-33 Income Nexus: Agriculture, All Variables 120

III-34 Income Nexus: Government, All Variables 121

III-35 Growth Rates: Income Nexus Flows, 1949-1965, 1949-1957, and 1957-1965 122

III-36 Taxes and Personal Income: Industry and Agriculture, 1949-1965 127

III-37 Financial Nexus, All Variables 133

III-38 Investment Ratios: NPA and NEC Estimates Compared 135

III-39 Total Financing of Investment (I) 136

III-40 Domestic Savings Ratios: NPA and NEC Estimates Compared 139

III-41 Industry and Agriculture: Ratio of Sectoral Savings to Gross Private Saving 142

III-42 Savings and Personal Income: Industry and Agriculture, 1949-1965 143

III-43 Total Availability: Industry 145

III-44 Total Availability: Agriculture 146

III-45 Import Substitution at the Aggregate Level 148

A-I-1 Dollar Price Indices, Imports, Exports, and Average, 1949-1965 . . . . . A1

A-I-2 NPA and NEC Constant (1955) Price Estimates of Exports and Imports, 1958-1965 . . . . . A2

A-I-3 Ratios Used to Disaggregate Commodity and Service Exports, 1949-1964 . . . . . A3

A-I-4 Import Disaggregation Ratios: Merchandise Imports A4

A-I-5 Import Disaggregation Ratios: Service Imports A5

A-I-6 Total Imports, and Merchandise and Service Components in Constant (1955) Prices A8

A-III-1 Calculation of X_a A16

A-III-2 Calculation of Y_a - I A17

A-III-3 Calculation of W_1 and W_2 . . . . . A18

A-III-4 Calculation of Y_h/C_h and Y_L/C_L ratios A19

A-III-5 Calculation of Y_h, X_h : Y_L, X_L A20

A-IV-1 Estimate of Gross Saving: Corporate Sector, 1949-1951 and 1960-1965 . . . . . A36

A-IV-2 Gross Saving: Household Sector A37

A-IV-3 Gross Saving: Corporate and Unincorporated Businesses A38

A-IV-4 Gross Saving: Corporate and Unincorporated Business Combined A39

A-IV-5 Gross Saving: Household Sector, by Agricultural and Nonagricultural (Industrial) . . A40

A-IV-6 Private Sector Gross Saving, by Industry Sector (S_h), and Agricultural Sector (S_L) A41

A-IV-7 Gross Domestic Saving (S), by Sectoral Component A42

A-IV-8 Estimate of Depreciation (at constant 1955 prices) using Hooley's proportion of total depreciation to total Gross Saving. A43

A-IV-9 Depreciation: Agriculture and Nonagriculture . . A44

A- V-1 Consumption (C), Investment (I), and Domestic Savings (S) as Shares of GNP: New NEC Estimates, Old NEC Estimates, NPA Estimates . A48

DIAGRAMS

I-1 National Income Framework Open, Dualistic Economy . . 5a

III-1 Foreign Nexus in NPA Framework 25

III-2 Exports, Imports, and Capital Flows as Percentages of GNP, 1949-1965 42

III-3 Agricultural Exports: Percentage of Total Exports, 1949-1965 51

III-4 Imports by Component, 1949-1965 63

III-5 Production Nexus 69

III-6 Income Nexus 110

III-7 Disposable Income, Consumption, and Savings--Agriculture and Industry 126

III-8 Financial Nexus 129

III-9 Gross Private Saving 131

A-1 Agricultural Outputs by Supply and Demand Components A12

A-2 Expenditure Disaggregation by Sector A24

I. MAJOR FEATURES OF THE OPEN-DUALISTIC ECONOMY APPROACH

A. GENERAL METHODOLOGY

The methodology applied in field study countries to analyze the dynamics of the open, dualistic economy is described here briefly in terms of major characteristics. Detailed discussion can be found in several preliminary papers written by members of the NPA research team.

The first methodological characteristic of our approach is that it emphasizes a system of quantitative relationships. This quantitative stress is basically a matter of establishing an accounting framework, indispensable for orderly organization of masses of statistical data. It is important to note emphasis on the concept of a system. It is only through the organization of quantitative data in some framework that the economy as a system can be analyzed and understood. By systematizing data and relationships we have a basis for establishing the orderliness and regularity of economic events, essential for formulating policies and employing techniques in the planning context.

The quantitative framework should be regarded as only the skeleton in our conceptual approach. Non-quantifiable aspects of economic development are often found to be of overriding importance. Hence, our framework has been constructed to allow us to organize the non-quantifiable

and institutional aspects of development around the quantitative skeleton. In fact, it is these more institutional forces which may turn out to be critical for obtaining insights into the operation of the system as a whole.

A second methodological feature of our framework is its general equilibrium approach. Analysis of the development process requires attention to the transformation of the economy as a whole rather than being limited to its discrete parts. The interrelationship among these parts is believed to be of fundamental importance in understanding the development process.

While there is this clearly aggregative approach in our analytical framework, we have also found it essential for our purposes to study key sectors, or nexuses, of economic activity. In fact, it is this device of using the parts to analyze the whole which is the basic methodological feature of our framework. This approach may be termed as decomposition analysis at the aggregate level and is characterized by breaking up the economy into a manageable number of nexuses and sectors. These centers of activity--which are parts of the whole--are consciously selected as those which are of dominant importance to the type of economy under analysis. In the open, dualistic economy framework, the key sectors of activity are agriculture, industry, and foreign trade, on the assumption that the pattern of development will involve a basically

triangular pattern of real resource flows among these three sectors. Two other nexuses are added for special applications: a financial nexus to allow incorporation of the savings-investment flows and a government nexus for eventual analysis of the government's impact through public policy and planning.

Our accounting framework, therefore, falls somewhere between standard national income accounting and input-output accounting. The standard national income accounting system is expanded, or modified, to emphasize, for example, flows (including intermediate goods) between agriculture and industry, between these two and foreign trade, and between both agriculture and industry and financial markets. In contrast to the large number of small sectors in the input-output approach among which symmetrical relationships are traced, our framework works with a limited number of sectors. The number is small enough to allow treating asymmetrical relationships among sectors. We are learning that these asymmetrical relationships pose some of the most basic analytical problems of development.

Our research teams in the Philippines and Thailand have been engaged in conducting empirical studies within this conceptual framework. Some studies focus on measuring the resource flows among the key sectors for analysis of the overall dynamics of these open, dualistic

economies. Others are concerned with more detailed investigation of the strategic components in the whole system--agriculture, foreign trade, and finance. From this empirical research we are now beginning to formulate hypotheses about alternative patterns of development of small, open economies.

The fundamental approach in our current work, therefore, is a combination of effort to develop an overall analytical framework for understanding the dynamics of this type of economy and detailed studies of key parts of the system. As time goes on, we will necessarily place increasing emphasis on intensive studies of particular problems within our framework. Already, much of our research is addressed to problems in the foreign trade sector, the industrial sector, the agricultural sector, and the financial nexus. Yet there is an underlying strain in our approach which seeks to relate these individual studies to analysis of the dynamics of the small, open economy as a whole. Each study places stress on relating the performance of the individual sector to the performance of other sectors and the economy as a whole.

It is our objective eventually to distill from our research within this framework conclusions about the planning techniques and policies appropriate to the special characteristics of the growth type being intensively studied. This is an area in which planning and development

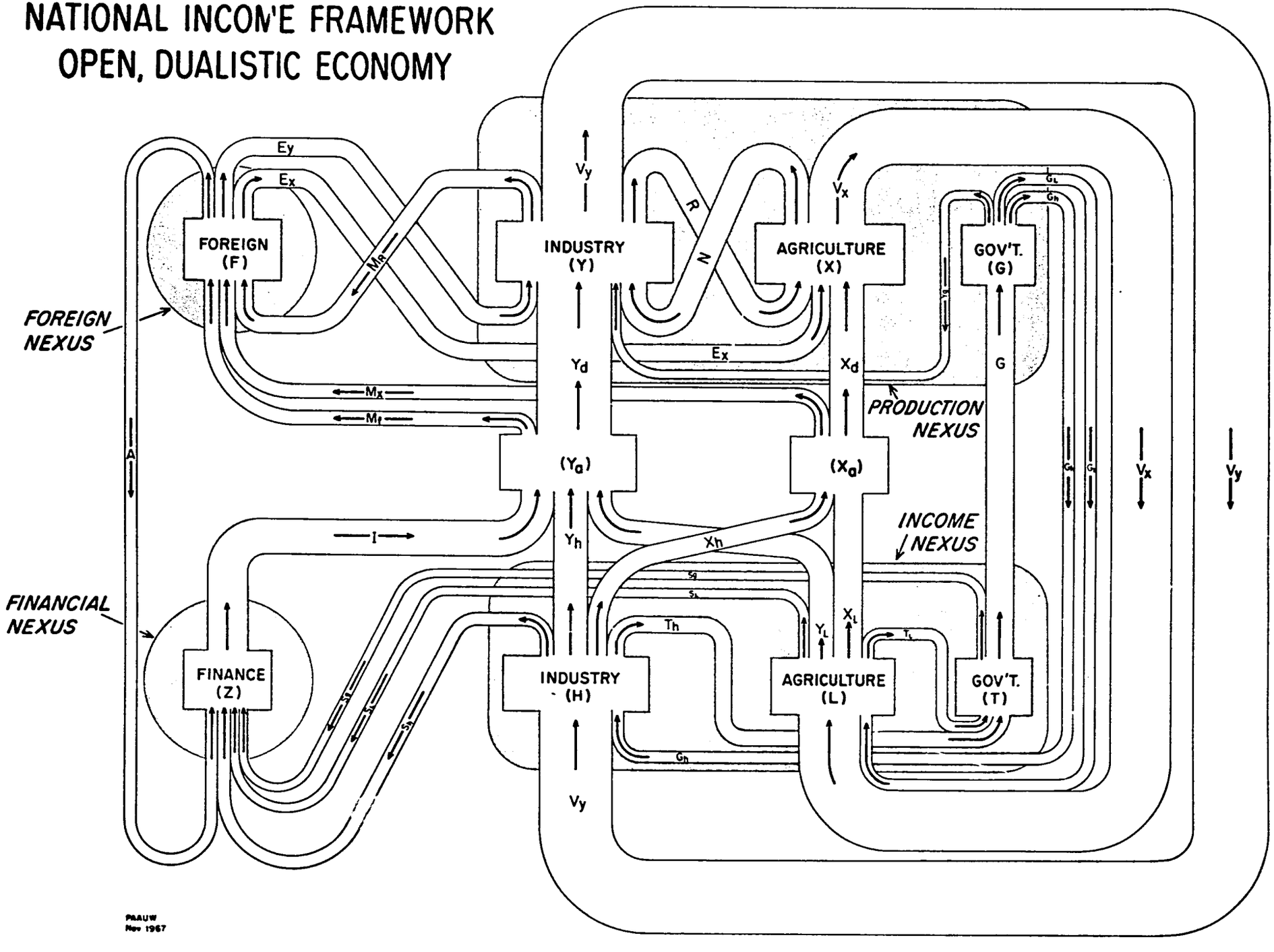
policy have been least satisfactory. In application of general planning models as well as specific methods and policies, the assumed behavioral relationships have seldom matched specific conditions in less developed countries. Insight into the dynamics of the open, dualistic economy and intensive analysis of its components may, therefore, be expected to yield results for improving the effectiveness with which existing techniques and development policy are applied.

B. THE EMPIRICAL FRAMEWORK

A representation of the national income accounting system for the open, dualistic economy is presented in Diagram I-1. This system distinguishes four basic nexuses of economic activity which are shown as shaded areas: production, income disposition, financial, and foreign. Two of the nexuses, production and income disposition, are broken down into three sectors: industry, agriculture, and government. In other words, each of the three domestic sectors appears in both the production and income disposition nexus, facilitating analysis of both production and income flows involving these three sectors.

Government productive activity is defined as the provision of collective consumption services, valued as the total of government expenditures. The private sector is comprised of agriculture and industry.

NATIONAL INCOME FRAMEWORK
OPEN, DUALISTIC ECONOMY



PAAUW
Nov 1967

Agricultural production is defined as productive activity which creates organic output by a process in which land is involved in an essential way.[1] This leaves the industrial sector defined to include essentially all nonagricultural private economic activity. The foreign nexus shows the relationship between the three domestic sectors and the rest of the world, while the financial nexus is the balancing sector. Functionally, it provides savings resources for the finance of the economy's investment.

The national income accounting system shown in the diagram, therefore, gives a synoptic view of the operation of the open, dualistic economy in terms of relationships among (and in some cases, within) five key centers of economic activity: industry, agriculture, government, foreign and finance. These relationships are shown as directed flows of monetary payments with arrows in the pipes indicating direction of the flows. All directed flows are national income accounting concepts, referring to magnitudes of monetary payments in a given year.

---

[1] Milled rice and similar processed agricultural products, however, are considered as agricultural output, with services (e.g., milling) rendered by the industrial sector construed as intermediate services purchased from the industrial sector.

The diagram contains a series of junctures at which several directed flows converge. There are 10 such junctures, represented by the 10 rectangular boxes, with the juncture symbol in parentheses. A central property of each juncture is that all directed inflows equal all directed outflows, a necessary feature of any legitimate national income accounting system. Conceptually, we can think of an accounting equation at each juncture stating this equality.

The 26 variables shown as the national income flows in the diagram are listed in Table I. We introduce each of these flows, considering them from the inflow (bottom) side of each of the 10 junctures.

Beginning with juncture (Y), which shows the industrial production sector, the four inflows represent the four components of demand for industrial output. Two of these are final demand: industrial output for final domestic use, Y_d; and industrial exports, E_y. The remaining two represent demand for intermediate goods purchased by government, Y_g; and by agriculture, N.

Juncture (Y_a) shows the total supply of industrial goods available for final domestic use. Total spending on these goods includes three components, the three inflows into the juncture: purchases of capital goods for investment, I; industrial goods purchased by industrial households for consumption, Y_h; and industrial goods purchased by agricultural households for consumption, Y_L.

Juncture (H) represents the income disposition function for industrial households. Virtually all income is received as factor income payments from the industrial sector itself, shown as the inflow V_y, value added by industrial production. This reflects our assumption that virtually all income in the industrial sector derives from employment within the sector itself. A similar assumption is made for the agricultural sector. A second, small component of industrial income is shown as the inflow G_h, government purchases of primary factor services from industrial households.

Juncture (X) shows agricultural production. The three inflows comprise the three components of demand for agricultural output. Two are final demand: agricultural output for final domestic use, X_d; and agricultural exports, E_x. The final inflow represents intermediate good purchases by industry, R.

Total supply of agricultural goods available for final domestic use is shown at juncture (X_a). The two inflows into the juncture are purchases of agricultural consumer goods by industrial households, X_h; and by agricultural households, X_L.

Inflows representing income of agricultural households are shown at juncture (L). The larger inflow, value added by agricultural production, V_x, represents payments for primary factor services

employed in agriculture while the smaller inflow represents government purchases of primary factor services from agriculture, G_L.

The government sector's total expenditures on goods and services for collective consumption are shown as the only inflow, G, into juncture (G). Government income is shown at juncture (T) as two inflows, industrial sector tax payments, T_h; and agricultural sector tax payments, T_L.

Juncture (F) represents the foreign nexus. The three inflows represent payments for imports: intermediate goods imported by the industrial sector, M_R; imports of agricultural consumer goods by the agricultural sector, M_x; and imported industrial goods for final use, M_f. The latter includes both imported (finished) capital goods and imported industrial consumer goods.

Finally, juncture (Z) shows the financial nexus. Three of the inflows are components of domestic savings: government savings, S_g; agricultural sector savings, S_L; and industrial sector savings, S_h. In addition, we would usually find an inflow of foreign savings, A, into the developing country's financial nexus. Where foreign savings are negative, the symbol A' is used to represent capital outflow.

We have now described each national income flow shown in the diagram in terms of inflows into each of the 10 junctures. Since each

inflow is an outflow from another juncture, there are a total of 26 national income flows, related by 10 accounting equations, one for each juncture.[2]

The national income accounting system represents a general equilibrium approach to facilitate investigation of the growth dynamics of the economy as a whole. All of the essential economic relationships which we consider significant for the development of this type of economy are included in the system. For this reason, the framework, although working within a national income accounting system, includes relationships not included in conventional systems. Examples include the recording of intersectoral intermediate goods flows, the disaggregation of households into three income distribution sectors, and the disaggregation of both exports and imports into those originating from the industrial or agricultural sectors. Disaggregation is limited to a selected number of intersectoral relationships in this aggregate framework to keep the number of variables studied within manageable bounds. However, additional disaggregation is being undertaken within associated accounts consistent with this general system.

---

[2]If total inflows were considered as additional variables, we would have 10 additional variables and 10 additional equations.

This approach represents a workable compromise between the relatively high level of aggregation employed in most development models and the excessive amount of disaggregation reflected, for example, in input-output analysis. The system is designed to facilitate quantitative analysis of the relationships among a small number of relatively large (aggregated) sectors. Our empirical work has demonstrated that data capabilities of the average developing country are adequate for statistical implementation of the national income framework.

TABLE I-1

Accounting Variables in Open, Dualistic Economy Framework

Juncture	Inflows
(Y)	Industrial Output sold as:
	Y_d : goods for final domestic use
	E_y : exports
	Y_g : intermediate goods purchased by government
	N : intermediate goods purchased by agriculture
(Y_a)	Total available industrial output for final use purchased as:
	I : investment goods
	Y_h : consumer goods purchased by industrial households
	Y_L : consumer goods purchased by agricultural households
(H)	Industrial sector income received as:
	V_y : value added by industrial production
	G_h : government primary factor purchases

Juncture	Inflows
(X)	Agricultural output sold as:
	X_d : goods for final domestic use
	E_x : exports
	R : intermediate goods purchased by industry
(X_a)	Total available agricultural output for final use purchased as:
	X_L : consumer goods purchased by agricultural households
	X_h : consumer goods purchased by industrial households
(L)	Agricultural sector income received as:
	V_x : value added by agricultural production
	G_L : government primary factor purchases
(G)	G : total government expenditures
(T)	Government revenue received as:
	T_h : industrial sector tax payments
	T_L : agricultural sector tax payments
(F)	Foreign sector receipts from:
	M_R : intermediate goods imported by industrial sector
	M_x : imported agricultural consumer goods

Juncture	Inflows
(F)(Continued)	Foreign sector receipts from:
	M_f : imported industrial goods for final use
	A : capital inflow (A' : capital outflow)
(Z)	Total domestic savings as:
	S_h : savings of industrial households
	S_L : savings of agricultural households
	S_g : savings of government

II. GENERAL EVALUATION OF DATA AND ESTIMATES

If a data framework is to be successfully employed for analysis of less developed countries, the framework must be consistent with the data capabilities of these countries. The national income accounting system just presented was designed to expand our knowledge of important relationships within open, dualistic economies by employing empirical data which could be obtained for at least several of these economies over a period of time long enough to be significant for the study of development strategy and policy. Nevertheless, our empirical applications of the framework in the Philippines and Thailand revealed that the reliability of our time series values of the estimates of the 26 variables under study varied considerably. There are differences in quality of specific estimates between the two countries as well as differences in presumed accuracy between earlier and later time periods. It is the purpose of this section to give the reader a general impression of the reliability of our framework estimates for the two countries. Detailed notes on estimation procedures for specific framework variables will accompany the presentation of estimates for both the Philippines and Thailand.

There are, first, general differences in reliability among the four nexuses within the framework. Referring to Diagram I-1, the two

upper nexuses, foreign and production, have been found in both countries to have a more adequate data base for estimating the national income variables identified than the lower nexuses, financial and income disposition. For the foreign and production nexuses, all flows between them and emanating from them could be estimated on the basis of empirical data for each year in the time series. This is not true for all flows in the two lower nexuses. Flows emanating from industrial and agricultural households, for example, have been estimated on the basis of periodic sample surveys rather than annually reported observations. (This is not true of government income disposition, which has been estimated from annual reports.)

This latter data problem concerns the disposition of income by the two private sectors, agriculture and industry. In other words, the distribution of sector income between savings and consumption and of sector consumption between spending on industrial or agricultural output must be considered as estimates based on a relatively weak empirical input. Contrasting with this aspect of the income disposition nexus is the fact that the values of agricultural sector and industrial sector income ($V_x + G_L$ and $V_y + G_h$, respectively) are derived from estimates of value added in the production nexus and, accordingly, are derived from a more satisfactory data basis.

This problem does not apply to the government sector's income disposition function. Estimates of government current ("collective consumption") spending, G, and government savings, S_g, are both based on annual reports. Similarly, government income, tax revenue ($T_h + T_L$), is estimated directly from annually reported data.

Special problems were also confronted in estimating the flows involving the financial nexus. While these savings and investment flows are formally residual or balancing items in national income accounting systems, the typical unreliability of many directly estimated variables in the system make a direct basis for estimating these critical parameters highly desirable, at least those financial flows involving the domestic economy. There is some basis for believing that estimation of flows of foreign savings as residuals may be satisfactory since foreign trade data (exports and imports) are annually reported and can be cross-checked by trading partner data, as we have done in the case of the Philippines.

In seeking to estimate aggregate domestic savings and investment levels, we have resorted to annual data for both the Philippines and Thailand. (The specific procedures employed to strengthen these estimates are described in notes accompanying the results.) We believe, therefore, that our estimates for these series, particularly for the

Philippines, establish a relative order of magnitude that can be used with considerable confidence. In other words, the estimated values of gross savings, S, and, by implication, gross investment, I, are interpreted to be relatively accurate. We have considerably less basis for confidence, however, in the reliability of sectoral savings estimates (with the exception of government savings, S_g). Estimates of the breakdown of private savings between agricultural sector savings, S_L, and industrial sector savings, S_h, are based only on periodic household sample surveys of household income disposition. This same problem (mentioned above) applies to estimation of all income disposition flows from agriculture and industry.

Given the gradual improvement of statistics in less developed countries over time, we find that our estimates for both the Philippines and Thailand have relatively greater accuracy for the later years in our series than for the earlier. The details behind this generalization may be found in the notes accompanying the presentation of our estimates for the two countries.

In the Philippines it was not until 1960 that the National Economic Council (NEC) began regular publication of its constant (1955) price series of national income accounts (employed as the basic data frame for our estimates). This NEC series goes back to 1956, but it is linked to

constant price estimates prepared by Ruben F. Trinidad, formerly of the National Economic Council, covering the period 1946-58.[1] Improvements have been made from time to time in the estimation procedures employed for the NEC series, but these have been largely concerned with devising better deflation methods for such components as trade, imported durable equipment, changes in inventory and net exports, and investment income. It should also be noted (as explained in detail in our data notes) that the growing disparity between the legal and free market foreign exchange rates in the late 1950s caused serious difficulties in estimating foreign sector components of the national accounts. Our estimates, presented in the next section, have corrected for serious biases in the official (National Economic Council) series attributable to this problem.

Changing data bases and improvements in estimation procedures obviously affect the intertemporal comparability of national account series. Our framework estimates for both countries have been made with an awareness of this problem, and at several points in our work revisions have been applied to our entire country series to improve intertemporal

---

[1]Ruben F. Trinidad, "A Measurement of the Nation's Output at Constant Prices," Statistical Reporter, Vol. III, No. 2 (April 1959), Office of Statistical Coordination and Standards, National Economic Council, pp. 23-31.

comparisons. These revisions are called to the reader's attention in the data notes.

A major revision of Philippines national accounts estimates appeared in August 1967 after our field work had been completed. A "new series" has been developed, covering the period 1962-66. It has not been linked to the "old series," although it is believed that the new series will eventually be extended back to the mid-1950s. The new series appears to represent substantial improvements in estimation procedures, particularly on the expenditure side of the national accounts. Our present estimates have not utilized the new series because of its failure to provide intertemporal comparability beyond the five years it covers. However, comparisons between the new series and both the old series and our own estimates are made for the four years (1962-65) in which they overlap at several points in the following presentation of data.

III. THE ESTIMATES, 1949-1965

Estimates of all variables in the national income accounting framework presented above have been completed for the Philippines for the period 1949-65.[1] This series of estimates provides the basic data basis for the quantitative and descriptive material presented in this section and for the analytical and comparative approaches applied in later sections. In this section these empirical results are presented, accompanied by a description of the sources and methods employed and an evaluation of the quality of the underlying data. Additional information presented in this section includes an elementary scrutiny of the body of data with observations on the behavior of some of the variables over time. Associated series are cited, where necessary, to illuminate the discussion. Several of these latter are designed to provide disaggregation of the variables in the framework where greater detail may prove helpful in understanding the behavior of aggregates as related to performance of the economy. An effort is made in this section to allow this body of data, as estimated by the methods described, to speak for itself with minimum

---

[1]We are most grateful for the contribution of Casimiro V. Miranda, formerly research assistant to the Project at the University of the Philippines. Mr. Miranda undertook much of the basic data work behind this section.

application of analytical techniques. More systematic analysis and a growth theory approach are applied to the quantitative results in later sections.

The estimates presented here are arranged by each nexus in the framework, in the sequence foreign, production, income disposition, and financial. While this procedure affords only a partial equilibrium approach at this point in the report, the procedure has the advantage of systematically recounting, over the 16-year period covered, the behavior of each of the several important nexuses in the Philippine economy. A more general equilibrium approach is adopted in the analytical sections, now in preparation.

A. THE FOREIGN NEXUS

In the National Planning Association framework for analysis of open, dualistic economies, the foreign nexus plays a central role. Accurate estimation of the magnitude of the important economic flows between this nexus and the domestic economy is essential for proper application of the analytical framework to a particular economy.

Considerable statistical work has been undertaken to examine and adapt official Philippine foreign trade and related data to support the later analysis for which the NPA framework is designed. The purposes

here are to present our estimates of the magnitudes of the economic flows involving the foreign nexus and to explain how they were derived. In some cases, comparisons with estimates from other sources are presented and explanations of significant differences in results are offered.

Application of the NPA framework requires data in real terms since the approach seeks to measure changes in real economic flows among the sectors considered strategic for development. There is only one set of constant price estimates of national accounts data for the Philippines which covers a period long enough to be useful for our investigation of intertemporal change in these flows. These estimates are prepared and issued by the National Economic Council (Office of Statistical Coordination and Standards).[2]

Building on the earlier work of the Central Bank, the National Economic Council has published constant price estimates extending back to 1946. The entire series is calculated in terms of 1955 as the base year.[3]

---

[2]All official national income series have been published by this office since 1957. Previously, responsibility for national income estimates rested with the Department of Economic Research of the Central Bank.

[3]Estimates for the period 1946-58 may be found in Ruben F. Trinidad, "A Measure of the Nation's Output at Constant Prices," Statistical Reporter, Vol. III, No. 2 (April 1959), Office of Statistical Coordination and Standards, National Economic Council. Estimates for later years are found in the April-June issues of the same publication.

Our constant price estimates for the variables in our framework cover the period 1949-65. The year 1949 was chosen as the initial year for our work since postwar rehabilitation was virtually completed by that time. Our estimates employ the NEC constant price series as our basic frame of reference with such adaptations and revisions as are necessary and feasible to improve the usefulness and accuracy of the basic data for our special purposes. Several examples of this approach to the NEC constant price series are presented in the present paper, though we are concerned here only with real flows involving the foreign nexus.

Description of the NPA national income framework for the open, dualistic economy was presented in the previous section. The foreign nexus from that framework is reproduced in Diagram III-1. Three aggregate flows are identified which show the foreign nexus' relationships with the domestic economy: (1) total exports, E; (2) total imports, M; and (3) capital inflow, A. These aggregate flows are related by the balance equations:

(1a) $A = M - E$ or

(b) $E = M - A$ or

(c) $M = E + A$

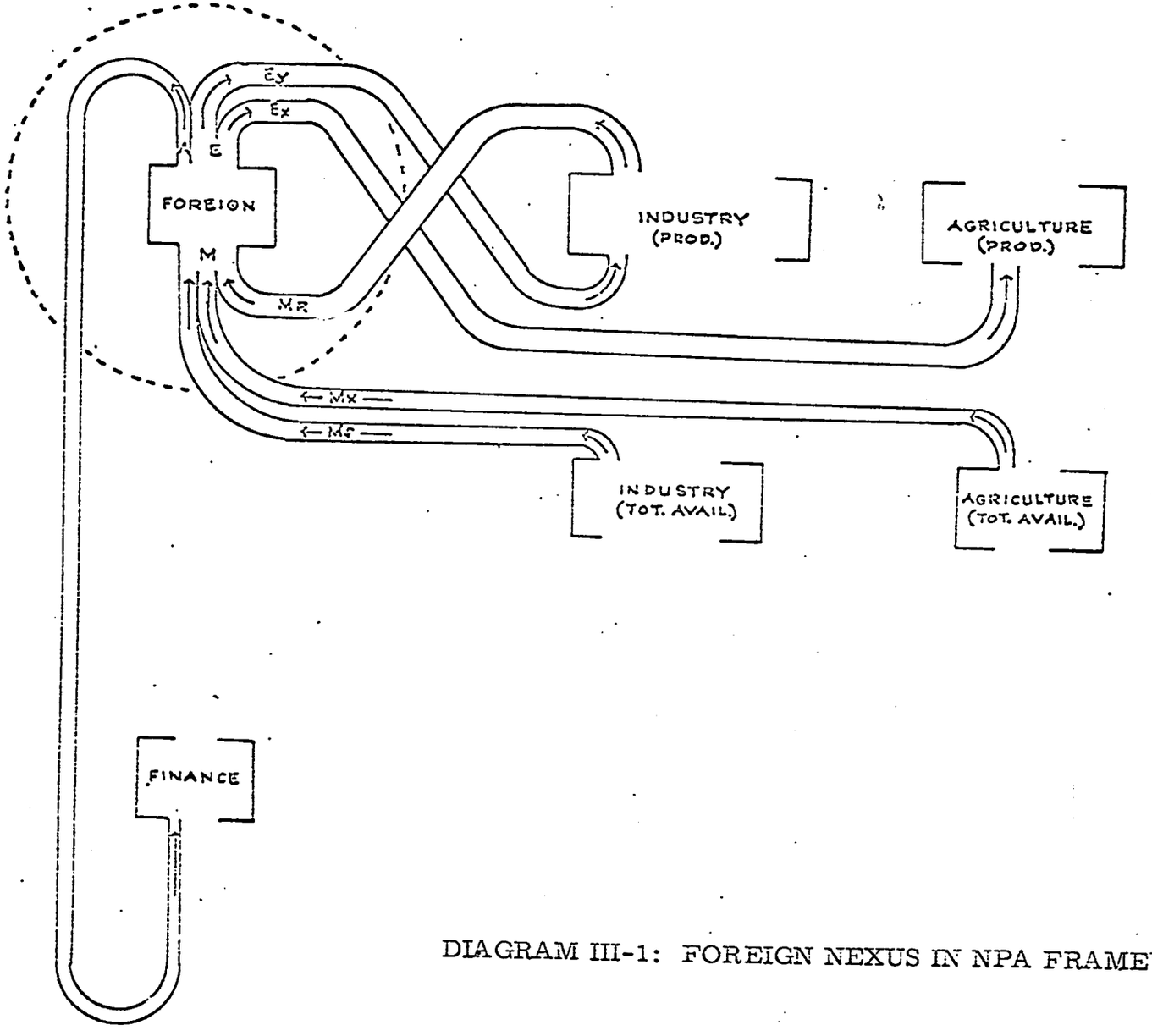


DIAGRAM III-1: FOREIGN NEXUS IN NPA FRAMEWORK

For analysis of the open, dualistic economy, both exports and imports are disaggregated to distinguish relationships between the foreign nexus and the two domestic production sectors, industry and agriculture. Exports are disaggregated into those originating from the industrial sector, E_y, and those originating from the agricultural sector, E_x. Imports are broken into three component flows: imports of intermediate inputs to industry, M_R; imports of final agricultural products, M_x; and imports of final industrial products, M_f. In a related series, imports of final industrial products are further disaggregated into capital goods, M_i, and consumer goods, M_y. Estimates are first presented for the three aggregates, followed by the results from disaggregating exports and imports.

1. Exports, Imports, and Capital Flows

There are no published estimates of the three aggregate foreign variables (exports, imports, and capital flows) which are satisfactory for studying the foreign nexus within a consistent national income accounting framework. This applies to both current and constant price series. Estimation of Philippine foreign nexus variables for national income accounting involves special difficulties which have not been solved in existing national income series. A basic problem is that national income

estimates must employ balance of payments data estimated in U. S. dollars. No peso balance of payments estimates are available. This raises difficult conceptual and practical problems of relating dollar values for foreign sector variables to peso values for the domestic economy. The problem is complicated in the case of intertemporal estimates covering the post-war period by discrepancies between the official exchange rate and the free market exchange rate.

It will be noted that the exchange rate problem applies to both current and constant price estimates. In constant price estimates, an additional problem of deflating the current price series to reflect base year prices exists. Here, too, special difficulties are caused by the balance of payments data utilized being available only in U. S. dollars.

From 1946 through 1959, the NEC current price values for the aggregate foreign nexus variables were derived by employing the official exchange rate of 2 pesos to 1 U. S. dollar. Beginning with 1960, however, conversion from dollars to pesos was done by employing NEC estimates of a rate (or rates) which reflected relative purchasing power.[4] The basic

---

[4] A unitary rate of ₱3.39 = U.S. $1.00 was employed for 1960; of ₱3.55 = U.S. $1.00 for 1961; ₱3.74 = $1.00 for 1962; and ₱3.91 = U.S. $1.00 for 1963. For 1964 and 1965, a rate of ₱3.89 = U.S. $1.00 was employed for exports and ₱3.91 = U.S. $1.00 was employed for imports. See Statistical Reporter, April-June issues, 1964, 1965, and 1966.

flaw in this approach is the resulting fictitious jump in the value of foreign nexus variables relative to domestic economy variables between 1959 and 1960. This problem is reflected in the current price series shown in Table III-1.

TABLE III-1

NEC Estimate of Foreign Nexus Variables, GNP, and Ratios in Current Prices, 1958-1961

	GNP (million pesos)	Exports (million pesos)	Imports (million pesos)	Ratio: Exports to GNP	Ratio: Imports to GNP
1958	10,684	1,273	1,442	.119	.135
1959	11,369	1,344	1,366	.118	.120
1960	12,126	2,364	2,650	.195	.219
1961	13,432	2,347	2,749	.175	.205

Source: NEC, Statistical Reporter, April-June issues, 1962, 1963, 1964.

It is apparent from Table III-1 that the NEC current price estimates provide an unsatisfactory basis for intertemporal comparisons of relationships between foreign nexus variables and the domestic economy. Ratios of both exports and imports to GNP show a sharp break between 1959 and 1960, primarily as a result of estimation procedures.

The difficulties are compounded in the case of constant price estimates. NEC national income estimates in constant prices retain the same exchange rate procedures employed in their current price series. Implicit price deflators are then applied to the foreign sector variables to produce the constant price series. Separate deflators are used for exports, imports, and net investment income. The result is a total adjustment between the original dollar data from balance of payments estimates and constant (1955) peso estimates (for national income accounting purposes) which obscures exchange rate, dollar price, and peso price changes. The NEC estimates and the deflators employed for the three aggregate foreign nexus variables (exports, imports, and capital flows) are shown in Table III-2 for the years 1958-61.

The practical purpose of the implicit deflator and exchange rate adjustment shown in Table III-2 for aggregate exports, imports, and capital flows is to establish equivalent valuation between foreign sector and domestic variables in the national income accounting system. Conceptually, these adjustments should be designed to produce both prices and exchange rate values approximating those prevailing in the base year, 1955. The erratic behavior of the NEC adjustments, both over time and among the three aggregates, raises serious doubts about their conformance to this conceptual standard. We note, for example, the discontinuity between the

TABLE III-2

NEC Foreign Nexus Estimates in Constant (1955) Prices, 1958-1961

	EXPORTS			IMPORTS			CAPITAL FLOW		
Year	Current $ Value (million)	Deflated Peso Value (million)	Implicit Deflator & Exch. Rate Adjustment	Current $ Value (million)	Deflated Peso Value (million)	Implicit Deflator & Exch. Rate Adjustment	Current $ Value (million)	Deflated Peso Value (million)	Implicit Deflator & Exch. Rate Adjustment
1958	637	1,055	1.66	721	1,225	1.70	84	170	2.02
1959	672	985	1.47	683	1,082	1.58	11	97	8.82
1960	697	1,894	2.72	781	2,172	2.78	84	278	3.31
1961	661	1,952	2.95	774	2,121	2.74	113	169	1.50

Source: Statistical Reporter, April-June issues, various years.

values of the implicit deflator and exchange rate adjustment for all three aggregates between 1959 and 1960. This was caused primarily by NEC's shifting from the previous basic exchange rate of ₱2.00 = U.S. $1.00 to a purchasing power parity rate of ₱3.39 = U.S. $1.00 for 1960. We also note the considerable variation in the value of the adjustment applied to the three aggregates for each particular year. Erratic values for the capital flow adjustment stand out; in particular, the value of 8.82 for 1959. This behavior results from the residual nature of this flow.

These NEC results suggest that closer approximation to the conceptual ideal involves three separately identifiable steps in converting the values of foreign nexus aggregates from U. S. dollars to base year peso values: (1) selection of proper dollar price series to deflate original dollar values of foreign nexus variables; (2) derivation of a uniform series of implicit price deflators for application to all three aggregates; and (3) selection of an appropriate exchange rate for conversion from deflated dollar values to peso values appropriate to establish equivalence between dollar and domestic peso valuation in the base year.

These steps have been followed in our estimates for the constant (1955) price series for the three aggregates under discussion. Dollar export and import price indices for the period 1949-65 were taken from Central Bank publications. An average of these indices was derived to

obtain the basic dollar price deflator for application to all three foreign sector variables.[5] This procedure avoids producing erratic behavior in the residual values obtained for the capital flow series--a problem observed in the NEC estimates. Our procedure also avoids the problem of reversing the direction of capital flows between the current dollar price series and the constant dollar price series--a phenomenon that would result for certain years if different deflators were applied to the export and import series. The dollar price indices for imports and exports and the average of the two (employed in our estimates) are presented in Appendix I, Table A-I-1.

The problem of converting the deflated dollar values to constant (1955) peso values presents additional conceptual difficulties. What is needed is a conversion rate which will value the foreign nexus variables in terms of domestic prices prevailing in the base year, 1955. Moreover, the same conversion rate must be applied to all years in the series to preserve continuity by conforming to the basic principle of base year (1955) valuation. The NEC estimates, as we have seen, failed to follow this

---

[5]The use of an average of export and import prices for deflating the foreign sector variables has the special merit in the Philippine case of tending to iron out the countervailing effects of changes in the structure of trade and the terms of trade. We are grateful to John Power for this suggestion.

procedure, causing discontinuities in their series for purely statistical reasons.

To meet the above requirements, a unitary equilibrium rate for 1955 is needed. It is apparent that there is no completely satisfactory empirical measure of such a unitary equilibrium rate. After searching the literature, we have chosen the rate of ₱3.00 to U.S. $1.00 as an approximation to the equilibrium rate for 1955. This rate is close to several published estimates for free market rates and purchasing power parity rates for 1955.[6]

---

[6] Pick's Currency Yearbook, in issues from 1956 on, gives a "black market rate," largely the result of the Hong Kong market, averaging ₱2.99 to U.S. $1.00 for 1955. See, for example, this source, 1961 issue, p. 334. The NEC estimates a purchasing power parity rate for 1955 of ₱3.10 = U.S. $1.00. See Statistical Reporter, Vol. VII, No. 2 (April-June 1963), p. 22. For further evidence that the free market rate averaged close to ₱3.00 = U.S. $1.00 for 1955, see the Far Eastern Economic Review, 1955 issues. For example, the free cross rate between pesos and dollars was very near 3 to 1 as reported in the following issues: March 10, 1955 (Vol. XVIII, No. 10, p. 319), September 29, 1955 (Vol. XIX, No. 13, pp. 413-414), and December 22, 1955 (Vol. XIX, No. 25, p. 798).

The relevant rates from this source and the derived peso-dollar cross rate are:

	HK $ per U.S. $	Pesos per HK$	Derived Cross Rate (approximate)
March 1955	5.90	1.975 - 1.940	3.014
September 1955	5.85	1.925 - 1.910	3.051
December 1955	5.87	1.955 - 1.948	3.021

Application of these procedures yields total adjustments between the current dollar and constant (1955) peso values which behave much more regularly than the NEC adjustments. Comparison of the total adjustments for the capital flow estimates by NEC and NPA are presented in Table III-3. It will be noted that the combination of deflator and exchange rate adjustment in the NPA series reflects only dollar price changes while the NEC series, which behaves very erratically, has no identifiable components explaining year-to-year changes, particularly after 1959.

Our estimates for the three foreign nexus aggregates, 1949-65, are presented in Table III-4. Dollar values for merchandise exports and imports are taken from Hicks' estimates which correct for unrecorded trade in the official statistics.[7] Exports and imports of non-merchandise current items, in dollars, are taken from Central Bank and International Monetary Fund sources.

Comparison of NPA and NEC estimates, 1958-65, for exports and imports in constant 1955 prices is shown in Table A-I-2 of Appendix I. The NEC constant price estimates are not available for years prior to

---

[7] George L. Hicks, "Philippine Foreign Trade, 1950-1965: Basic Data and Major Characteristics" (Washington: National Planning Association, Center for Development Planning, September 1966), mimeographed. Export estimates for 1958, 1961, 1963, 1964, and 1965, however, are based on a revision of the earlier estimate by Hicks in August 1967.

TABLE III-3

Capital Flows in Current Dollar and Constant (1955) Peso Prices:
NEC and NPA Estimates Compared (all dollar and peso values in millions)

	NEC				NPA		
Year	Current Peso Value (1)	Current Dollar Value (2)	Deflated (1955) ₱ Value (3)	Deflator & Exchange Rate Adjustment (4)	Current Dollar Value (5)	Deflated (1955) ₱ Value (6)	Deflator & Exchange Rate Adjustment (7)
1949	574	287	680	2.37	256.8	663	2.58
1950	- 47	- 23	- 46	2.00	- 22.6	- 62	2.74
1951	103	51	80	1.57	42.5	107	2.51
1952	112	56	98	1.75	- 4.0	- 11	2.75
1953	104	52	96	1.85	5.2	14	2.69
1954	163	82	155	1.89	44.0	126	2.86
1955	321	161	321	2.00	102.2	306	3.00
1956	139	70	130	1.86	46.8	139	2.97
1957	421	211	375	1.78	184.3	533	2.89
1958	169	84	170	2.02	98.0	274	2.80
1959	22	11	97	8.82	60.0	159	2.65
1960	286	84	278	3.31	89.2	237	2.66
1961	402	113	169	1.50	106.3	292	2.75
1962	241	65	99	1.52	50.7	137	2.70
1963	-382	- 98	-480	4.90	38.7	98	2.53
1964	129	33	-205	?	92.8	237	2.56
1965	-110	- 28	-356	12.71	57.4	144	2.52

Sources: NEC estimates: Statistical Reporter, April-June issue, various years. NPA estimates: see text.

TABLE III-4

NPA Estimates of Foreign Sector Variables, 1949-1965
(million pesos, 1955 constant prices)

Year	Imports	Exports	Capital Inflow
1949	1,834	1,171	663
1950	1,217	1,279	- 62
1951	1,562	1,455	107
1952	1,496	1,507	- 11
1953	1,601	1,587	14
1954	1,834	1,708	126
1955	2,139	1,833	306
1956	2,145	2,006	139
1957	2,524	1,991	533
1958	2,029	1,755	274
1959	1,961	1,802	159
1960	2,215	1,978	237
1961	2,341	2,049	292
1962	2,235	2,098	137
1963	2,348	2,250	98
1964	2,666	2,429	237
1965	2,868	2,724	144

Sources and Methods: see text.

1958, when only net flows were shown for the foreign sector in the NEC national income accounts. This comparison shows the advantages of our estimation procedures which, unlike the NEC series, avoid showing a sharp break in the series between 1959 and 1960. A similar comparison of the NEC and NPA estimates of the constant (1955) price series for capital flows for the entire period 1949-65 is shown in Columns 3 and 6 of Table III-3.

2. Foreign Sector Performance: Aggregate Level

Without venturing into detailed analysis here, we pause to note a few results implied by the foreign sector estimates. They provide us, for the first time, with a relatively satisfactory basis for measuring some common relationships between the foreign nexus and the domestic economy. They also provide a first basis for measuring the performance of the Philippine foreign nexus in real terms during the period, 1949-65.

In a discussion of open developing economies, some measure of the relative degree of openness is useful for comparison with other economies. In this section, we investigate only the implications of our estimates for two common measures frequently cited in development literature: the ratios of exports and imports to gross national (or domestic)

product.[8] Previously, little was known about the behavior of these ratios during the recent postwar period of development and structural change, although one frequently confronts the assertion that the Philippine ratio of exports to total output has declined.

Export and import ratios calculated from NPA and NEC estimates are presented in Tables III-5 and III-6. As we would expect from the previous discussion, both ratios as calculated from NEC data show a sharp increase between the 1950s and 1960s. The ratios calculated from NPA data, however, behave more regularly since they do not reflect the exchange rate problem inherent in the NEC export and import data. Ratios of exports, imports, and capital inflows to gross national product, calculated from the NPA series, 1949-65, are shown graphically in Diagram III-2.

The behavior of the export ratio calculated from NPA data, as a crude measure of the economy's openness, deserves comment. From 1949 to 1957, this ratio hovered slightly above 20 per cent, but it fell sharply to a lower level during the period 1958-63. By 1964 and 1965, the ratio had again almost reached the 20 per cent level, which was roughly its average for the entire period, 1949-65.

---

[8] More complex measures of openness of the Philippine and Thai economies, relating foreign nexus variables to a variety of domestic aggregates, is undertaken in later sections.

TABLE III-5

Philippine Export Ratio, 1949-1965: NEC Current and Constant (1955) Price Estimates and NPA Constant (1955) Price Estimates Compared

	Export Ratio		
	NEC Data		NPA Estimates**
Year	Current P	Constant P*	
1949	.144		.207
1950	.143		.204
1951	.148		.222
1952	.133		.214
1953	.143		.208
1954	.137		.209
1955	.130		.210
1956	.129		.212
1957	.120		.203
1958	.119	.123	.175
1959	.118	.103	.170
1960	.195	.201	.182
1961	.175	.186	.176
1962	.176	.175	.175
1963	.200	.158	.178
1964	.192	.184	.187
1965	.197	.179	.197
Average	.153		.196

*No export value data prior to 1958.

**Using NPA estimates of exports in constant (1955) prices and NPA revised estimates for GNP in constant (1955) prices. (See Section B for details of NPA revisions of GNP estimates.)

TABLE III-6

Philippine Import Ratios:
NEC Current and Constant (1955) Price Data and NPA Constant (1955) Price Series Compared

	Import Ratio		
	NEC Data		NPA Estimates**
Year	Current P	Constant P*	
1949	.237		.325
1950	.136		.194
1951	.162		.239
1952	.148		.212
1953	.156		.210
1954	.157		.224
1955	.167		.245
1956	.143		.226
1957	.163		.257
1958	.135	.123	.202
1959	.120	.103	.185
1960	.219	.201	.203
1961	.205	.186	.201
1962	.192	.175	.186
1963	.178	.158	.186
1964	.199	.184	.205
1965	.192	.179	.208
Average (excl. 1949)	16.7		.226***

*No import value data prior to 1958.

**Using NPA estimates of imports in constant (1955) prices and NPA revised estimates for GNP in constant (1955) prices. (See Section B for details of NPA revisions of GNP estimates.)

***Including 1949, the average is .182 for the NEC series and .232 for the NPA series.

It is interesting to observe, therefore, that except for the period 1958-63, the export orientation of the Philippine economy has remained relatively constant. In fact, the 20 per cent export ratio is the same level shown for the economy in the prewar years of the late 1930s.[9]

Our estimates suggest that the degree of openness of the Philippine economy has not been significantly affected by the considerable structural change which has occurred since World War II. Similarly, ignoring the atypical year 1949, one observes no clear tendency toward a changing import ratio. This latter would seem to contradict the common presumption that rapid development and industrialization inevitably place growing strains on the balance of payments by retarding exports and swelling imports.

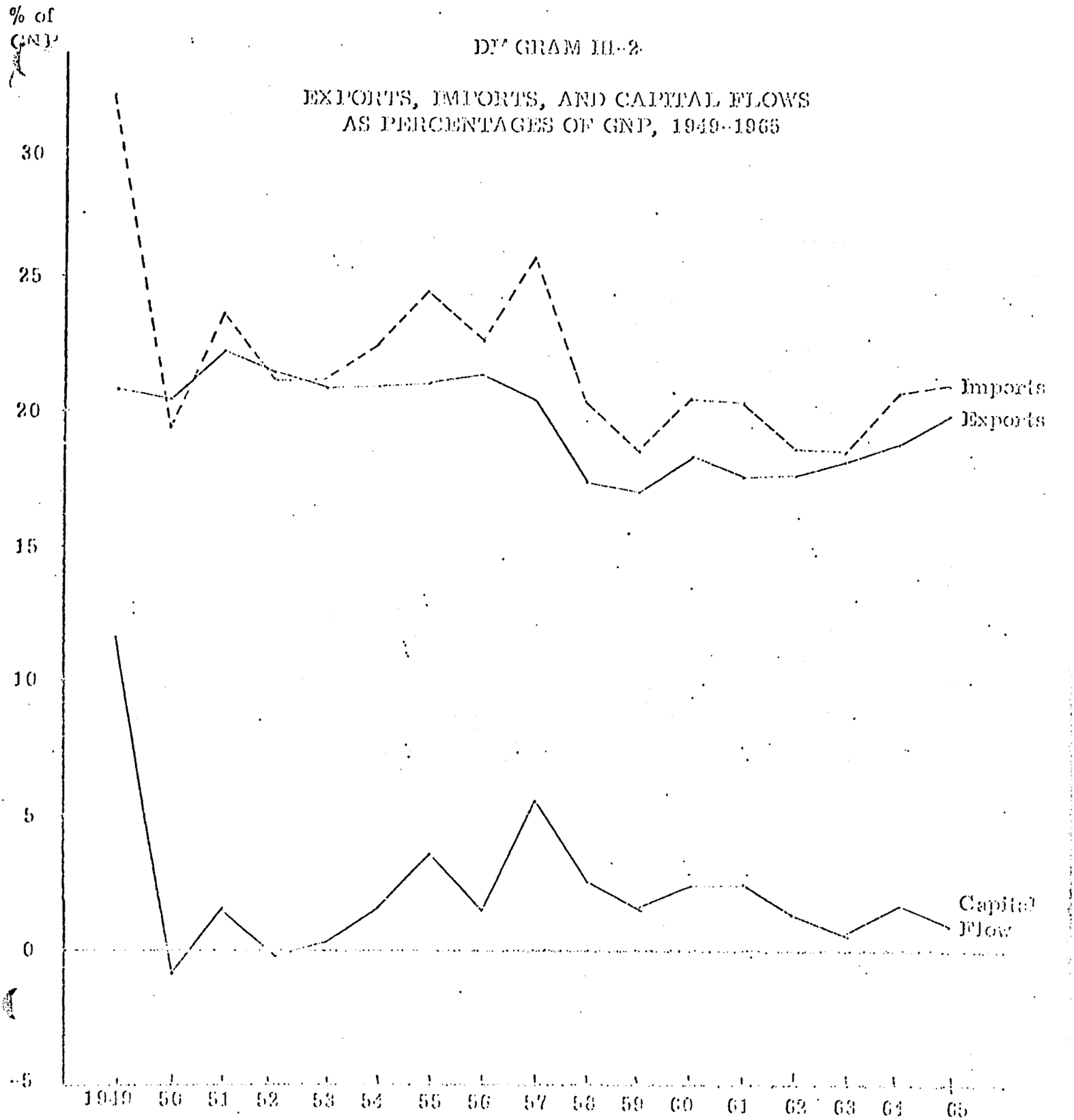
The NPA aggregate estimates in constant prices also allow us to evaluate the performance of the foreign nexus in real terms. Average annual growth rates have been calculated for this purpose. All average growth rates employed for the period as a whole (1949-65) are based on three-year averages for both the initial and terminal values used to compute the average compound rate of increase. For GNP and exports the initial

---

[9]See Douglas S. Paauw, "Economic Progress in Southeast Asia," The Journal of Asian Studies, Vol. XXIII, No. 1 (November 1963), p. 80.

DIAGRAM III-2

EXPORTS, IMPORTS, AND CAPITAL FLOWS
AS PERCENTAGES OF GNP, 1949-1965



value is based on the average for the years 1949, 1950, and 1951; whereas, the terminal value is based on the average for the years 1963, 1964, and 1965. Because of the erratic 1949 value for imports,[10] however, the initial value is the average for 1950, 1951, and 1952, while the terminal value is the average for the same three years as for GNP and exports (1963, 1964, and 1965). The average growth rates thus calculated are presented in Table III-7.

Employing three-year averages for initial and terminal values, total exports grew at an average rate (4.7 per cent per year) somewhat below the rate of growth of GNP (5.6 per cent per year). Imports grew slightly more rapidly (4.8 per cent per year) than exports.

Merchandise exports grew at approximately the same annual rate (5.5 per cent) as GNP, while service exports grew at a much slower annual rate (2.4 per cent) than GNP. Almost the same disparity in growth rates between merchandise and services was found for imports, with merchandise imports growing at an average annual rate of 5.4 per cent and service imports at 2.7 per cent.

---

[10]The erratically high value of imports in 1949 is attributed to the large volume of imports needed to complete the postwar rehabilitation of the economy and to an accompanying large-scale inflow of foreign capital.

It is instructive to study the behavior of the export growth rate by five-year subperiods (see Table III-8). Total exports grew most rapidly during the first five-year period, 1949-54, showing an average annual growth rate of 7.8 per cent. In the period 1954-59, a sharp retardation is apparent, with the annual rate of growth falling to only 1.1 per cent. In the period 1959-64, the annual growth rate rose to 6.2 per cent.

Moreover, both components of total exports, merchandise and services, showed a much slower annual rate of growth in the period 1954-59 than in the other five-year periods (1949-54 and 1959-64). The rate of growth of merchandise exports was 3.0 per cent per year for the period 1954-59, compared to 11.8 per cent for the earlier and 6.3 per cent for the later five-year periods. Service exports showed a negative annual growth rate (-4.6 per cent) from 1954 to 1959, compared to a slightly positive growth rate for 1949-54 (0.8 per cent) and a significant rate of expansion (5.5 per cent per year) for the period 1959-64.

Scrutiny of the three series, gross national product, exports, and imports, suggests that there is a break in the growth behavior of all three, beginning with 1957 or 1958. All three variables grew at substantially higher rates from 1950 to 1956 than in the subsequent

TABLE III-7

Growth Rates: NPA Estimates of GNP and Foreign Nexus Variables, 1949-1965*
(all in 1955 constant prices)

Variable	Period	Growth Rate
GNP	1949/50/51 - 1963/64/65	5.6
Exports	1949/50/51 - 1963/64/65	4.7
Mdse. Exports	1949/50/51 - 1963/64/65	5.5
Service Exports	1949/50/51 - 1963/64/65	2.4
Imports	1950/51/52 - 1963/64/65	4.8
Mdse. Imports	1950/51/52 - 1963/64/65	5.4
Service Imports	1950/51/52 - 1963/64/65	2.7

*Compound annual rate of increase; i.e., geometric average.

TABLE III-8

Growth Rates: Exports by Five-Year Periods*
(all in 1955 constant prices)

Period	Total Exports	Merchandise Exports	Service Exports
1949-1954	7.8	11.8	0.8
1954-1959	1.1	3.0	-4.6
1959-1964	6.2	6.3	5.5

*Compound rate of increase; i.e., geometric average.

period.[11] From 1950 to 1956, gross national product grew at an average rate of 7.2 per cent per year; exports, at 9.4 per cent; and imports, at 9.9 per cent. In the remainder of the time series, 1956-65, all three variables showed a substantially lower growth rate, 4.3 per cent for gross national product; 3.5 per cent for exports; and 3.3 per cent for imports. (This retardation was even sharper during the six-year period 1956-62, during which gross national product grew at 4.0 per cent per year, exports at 0.9 per cent, and imports at 0.8 per cent.) There appears to be a clear relationship (though not necessarily on an annual basis) among the three variables. Our data also suggest that changes in the rate of growth of output are associated with wider swings in the same direction of growth of exports and imports. Over the longer period, however, these disparities in the growth rates of the three aggregates appear to even out, and the three have moved at approximately the same rate of growth (as noted above). This behavior of output and foreign sector aggregates in the Philippines appears to be somewhat untypical of open, dualistic economies. The close relationship among the rate of growth of output, imports, and exports over

---

[11] As mentioned earlier, 1949 is excluded as a base year because of the erratically high value of imports in that year.

the 16-year period studied has allowed growth without the severe balance of payments problems characteristic of many developing countries.

Capital inflow has been relatively modest during the period 1950-65.[12] (A special feature of capital flows into the Philippines has been the relatively large private component corresponding to small inter-government and international assistance.) Over the period 1950-65, annual capital inflow averaged 1.6 per cent of gross national product. Diagram III-2 shows that capital inflow over this period rose to a peak of about 5 per cent of GNP in 1957 and tapered off at about 1 per cent of GNP from 1962 to 1965.

3. Agricultural Versus Nonagricultural Exports

Total exports, as explained above, include both merchandise and service exports. Disaggregation of exports by source, agricultural and nonagricultural, was undertaken for both the merchandise and service components, with different methods applied for the two components.

Ratios to disaggregate the merchandise (commodity) component were derived from the detailed commodity export data published by the

---

[12] In 1949 capital inflow was atypically large, equivalent to 11.7 per cent of GNP.

Bureau of Census in Foreign Trade Statistics of the Philippines. Commodity exports were classified as agricultural or nonagricultural on the basis of which sector contributed the greater share of export value. If more than 50 per cent of peso export value was contributed by nonagricultural sector processing and marketing costs, the commodity was classified as a nonagricultural (industrial) sector export; and if more than 50 per cent of peso export value was ex-farm value, then it was classified as an agricultural export. This method of classification was employed to allow accounting in the NPA framework of intermediate goods and services flows associated with export production.

Ratios to disaggregate the service component of exports were derived by studying the "non-trade" transactions reported in the Central Bank's Annual Reports. The following items were considered nonagricultural service exports: non-monetary gold, foreign travel, transportation, insurance, and investment income. Two items were split between agricultural and nonagricultural exports: foreign government expenditures (largely U. S.) and miscellaneous. This was done on the basis of the relative contributions of agriculture and nonagriculture to private value added. The ratios resulting from these procedures for commodity and service exports are presented in Table A-I-3, Appendix I.

Exports, disaggregated on this basis for the period 1949-65, are presented in Table III-9. Disaggregation between agricultural exports, E_x, and nonagricultural (industrial) exports, E_y, is shown separately for the commodity and service components. The results shown are in constant (1955) peso prices using the same procedures as applied to the aggregates for price deflation and exchange rate adjustment.

The combined forces of differing ratios applied to the agricultural-nonagricultural breakdown for merchandise and service exports and the annual variations in the behavior of these two components of exports produce rather erratic results in the relative contributions of agricultural and nonagricultural exports to total exports. The latter are shown by year in Table III-9 as E_x/E and E_y/E, respectively. Diagram III-3 gives a graphic picture of the ratio of agricultural exports to total exports (E_x/E).

The Korean war export boom year 1951 shows the highest annual contribution of agriculture to total exports. In that year, the increased export demand was felt primarily in terms of commodities of agricultural origin. Over the entire period there is a gentle, but erratic,

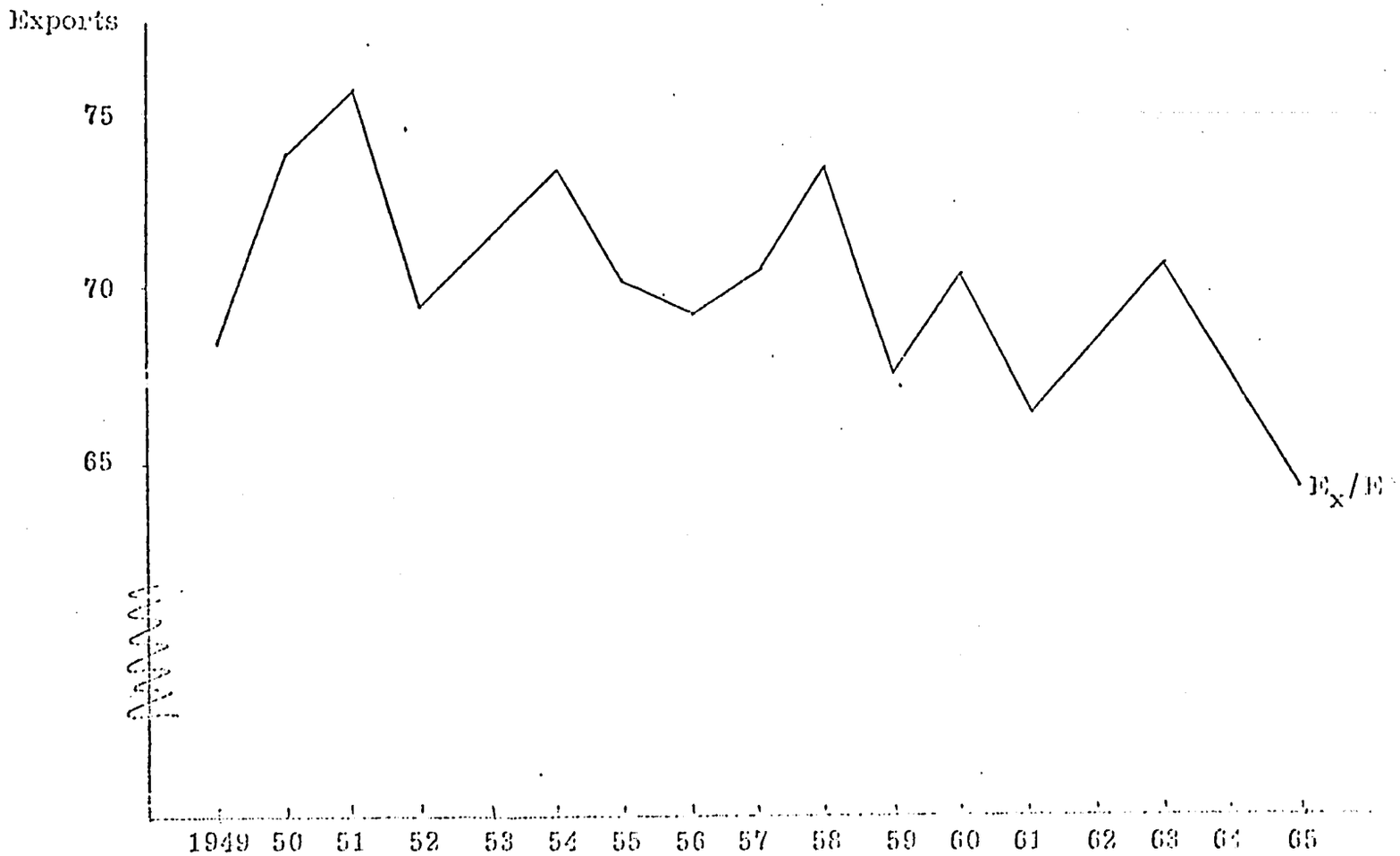
TABLE III-9

Disaggregation of Exports into Agricultural, E_x, and Non-Agricultural, E_y, by Merchandise and Service Components, and Ratios of E_x and E_y to Total Exports, E, 1949-1965 (in million pesos, constant 1955 prices)

	E_x				E_y			
Year	Mdse.	Services	Total	E_x/E	Mdse.	Services	Total	E_y/E
1949	624	181	805	.687	75	291	366	.313
1950	814	132	946	.740	81	252	333	.260
1951	971	134	1105	.759	121	229	350	.241
1952	864	185	1050	.697	158	299	457	.303
1953	931	203	1134	.715	155	293	453	.285
1954	1051	202	1253	.734	167	288	455	.266
1955	1072	215	1287	.702	227	319	546	.298
1956	1206	195	1401	.698	263	342	605	.302
1957	1218	186	1404	.705	249	338	587	.295
1958	1146	144	1290	.735	198	267	465	.265
1959	1095	124	1219	.676	316	267	583	.324
1960	1283	110	1393	.704	317	268	585	.296
1961	1234	138	1332	.665	358	329	687	.335
1962	1323	118	1441	.687	341	316	657	.313
1963	1485	106	1591	.707	342	317	659	.293
1964	1514	121	1635	.673	405	389	794	.327
1965	1556	192	1748	.642	392	584	976	.358

DIAGRAM III-3

AGRICULTURAL EXPORTS:
PERCENTAGE OF TOTAL EXPORTS, 1949-1965



tendency toward a shift from agricultural to nonagricultural exports.[13] This can be seen by visual inspection of Table III-9. It is also reflected in differing annual growth rates of agricultural and nonagricultural exports. Employing three-year averages for initial and terminal values, the average annual growth rate for the period 1949-65 is 4.1 per cent for agricultural exports, compared to 6.2 per cent for nonagricultural exports.

4. The Composition of Imports

The Central Bank of the Philippines and ECAFE publish estimates of the composition of imports by economic groupings.[14] However, neither of these series was found to be appropriate for application of the NPA framework to the Philippine foreign nexus. Independent estimates were made by using original foreign trade data. The results are presented in this section and are compared, when possible, with the Central Bank and ECAFE estimates.

---

[13] Virtually all of this shift was accounted for by the rapid growth of extractive industry exports (minerals and logs). Manufactured exports have been negligible.

[14] The Central Bank's estimates are published in Annual Reports of the Central Bank of the Philippines and in greater detail in the Central Bank's Statistical Bulletin, issued quarterly by the Bank's Department of Economic Research. ECAFE's estimates are published in the annual Economic Survey of Asia and the Far East.

The NPA framework distinguishes among three economic categories for disaggregation of imports, with one category broken down into two components. The concepts described below have been employed consistently in our statistical work.

M_x: Imports of agricultural goods for consumption are agricultural commodities which do not embody a significant input of industrial processing and which are not intended for further processing before reaching consumers. Major examples include unprocessed meat products, fresh and dried fruits, and, in several years, rice.

M_f: Imports of finished industrial goods comprise two distinct components: M_y, industrial finished goods for consumption, and M_i, finished capital goods. Finished industrial consumption goods, M_y, are those made available for consumer use without further (domestic) processing. Consumer durables (which are not employed as capital goods for production) are included here. Major examples include canned and processed foods, medical and pharmaceutical items, appliances, and passenger vehicles. Industrial finished goods of a capital goods nature, M_i, are defined as those finished goods which are available, without further processing, to render productive services. They may, however, require domestic installation costs before their productive services can be

rendered. Major examples include transportation equipment, factory machinery, and construction equipment.

M_R: Imported intermediate goods includes all goods which will receive a significant amount of domestic industrial processing before they reach the finished goods stage. Thus, this category includes intermediate goods for both consumer goods and capital goods production. Major examples include fibers and yarns for textiles, steel sheets and pipes, and industrial chemicals.

Neither the Philippine Central Bank nor the ECAFE series of imports by components distinguishes among precisely the same categories as those just defined. The major difference is that our categories distinguish between the agricultural (M_x) and industrial (M_y) components of finished consumer goods while the Central Bank and ECAFE categories do not. By combining our two consumer goods components, however, it is possible to show a general comparison between the NPA results for merchandise imports with those provided by the Central Bank and ECAFE. This is done in Table III-10. The great differences among the results suggest the necessity for our independent disaggregation for analysis within the NPA framework. In the NPA series, for example, consumers goods imports declined from 55 per cent of merchandise imports to 31 per cent between 1951 and 1964, compared to a

TABLE III-10

Import Disaggregation (Merchandise Only): Comparison, NPA, Central Bank, and ECAFE Estimate
(percentage of total imports)

	Consumer goods ($M_x + M_y$)			Intermediate goods (M_R)			Capital goods (M_I)		
Year	NPA	C.B.	ECAFE	NPA	C.B.	ECAFE	NPA	C.B.	ECAFE
1949	57.8	37.3		33.1	52.8		9.1	9.9	
1950	54.0	27.9		37.0	62.0		9.0	10.1	
1951	54.5	26.0	58.7	37.1	68.2	21.9	8.4	5.8	19.4
1952	50.0	23.3	48.9	38.7	65.1	28.4	11.3	11.6	22.4
1953	46.7	20.3	48.9	39.0	69.7	29.2	14.3	10.0	21.9
1954	47.7	19.4	47.7	38.3	72.2	29.0	14.0	8.4	23.3
1955	44.7	20.5	47.3	39.8	70.5	27.9	15.5	9.0	24.8
1956	41.3	17.5	39.3	38.5	69.5	29.7	20.2	13.0	31.0
1957	38.9	16.8	37.3	42.2	72.0	28.1	18.8	11.3	34.6
1958	41.5	18.6	38.3	39.4	69.3	28.1	19.0	12.1	33.6
1959	35.0	12.0	28.5	43.5	72.4	33.3	21.6	15.6	38.2
1960	33.4	13.8	27.0	40.0	61.0	26.9	26.6	25.2	46.1
1961	31.3	15.7	26.7	43.9	66.0	28.4	24.8	18.3	44.9
1962	25.3	14.2	24.7	53.5	69.9	31.7	21.2	16.0	43.6
1963	31.7	15.2	26.1	44.1	68.5	29.5	24.2	16.3	44.4
1964	31.2	15.4	24.0	43.9	67.5	30.6	24.9	17.1	45.4
1965	33.8	18.5		40.9	62.8		25.3	18.7	

Sources: NPA, see notes.
Central Bank, Annual Reports, various issues.
ECAFE, Economic Survey of Asia and the Far East, various issues.

decline of from 26 per cent to 15 per cent in the Central Bank series and 59 per cent to 24 per cent in the ECAFE series. These differences are apparently caused by substantially different concepts of consumer, capital, and intermediate goods.[15]

A serious limitation of the Central Bank and ECAFE series (from the viewpoint of the NPA framework) lies in the fact that neither includes service imports, covering only merchandise (commodity) imports. Our series covers both merchandise and service imports so that import disaggregation results may be applied to the national income accounting framework in which all import payments for current goods and services must be accounted for consistency reasons.

The concepts of M_x, M_y, M_i, and M_R, defined above, were first applied to Philippine merchandise import data. This process of disaggregation involved serious data problems. Several different systems of presentation of merchandise imports by detailed groupings were used in the Philippines during the period studied (1949-65). Moreover, these detailed data have been published only for recent years; i.e., since 1959. The U. N. Classification Code system (five digit) has been employed by

---

[15] Detailed import classification systems for all three series are available and can be obtained upon request. Definition of concepts employed for each category are available for only the NPA series.

the Bureau of Census and Statistics only since 1964, although the data for the years 1959-63 were presented roughly in the order followed in the U. N. system. For years prior to 1959, i.e., 1949 through 1958, it was necessary to resort to Central Bank worksheets (mimeographed) to obtain the original import data classified in detail by commodities. Several different orders of listing and classification systems were employed in these worksheets, including the older U. N. classification system. This variation in presentation and classification of the merchandise import data may well have caused some minor inaccuracies in our disaggregated results. For all years, the original data employed were in terms of current peso prices. Ratios for each category (M_x, M_y, M_i, and M_R) were obtained from these current price data and then applied to our aggregate constant (1955) peso price estimates for merchandise imports for each of the years, 1949-65. The ratios obtained and applied are presented in Appendix I, Table A-I-4.

Service imports were disaggregated separately, using service imports in U. S. dollars as reported by the Central Bank. They were allocated among the categories, M_x, M_y, M_i, and M_R, on the basis of the items classified by the Central Bank into each category of reported service imports. These categories are: foreign travel, transportation, insurance, investment income, government (not elsewhere specified),

and miscellaneous. Arbitrary judgments were made on allocation of these items to our categories on the basis of information obtained from the Central Bank. Details on these allocation procedures are found in the notes to Table A-I-5 in Appendix I. The allocation ratios (as fractions of total service imports by our categories) by year are presented in Table A-I-5.

The results of the disaggregation of merchandise and service imports by year, showing percentages allocated to each category (M_x, M_y, M_i, and M_R) and actual values in constant 1955 prices, are shown in Tables III-11 and III-12, respectively. Constant price values were derived by applying the ratios obtained from current price data to the constant price series for merchandise and service imports, shown in Table A-I-6.

In Table III-13, the merchandise and service components are added by categories, M_x, M_y, M_i, and M_R. Finally, Table III-14 shows the completed results of the disaggregation process applied to constant (1955) price data for imports. Values (from Table III-13) and the percentage of total imports by category are shown for each year in the 1949-65 period.

The behavior of the components of real imports, 1949-65, is shown graphically in Diagram III-4. It is apparent from visual

TABLE III-11

Disaggregation: Merchandise Imports, 1949-1965
(in million pesos, constant 1955 prices)

Year	TOTAL	M_x		M_y		M_i		M_R	
		%	Value	%	Value	%	Value	%	Value
1949	1,461.7	13.7	200.3	44.1	644.7	9.1	133.0	33.1	483.7
1950	881.1	9.4	82.8	44.6	393.0	9.0	[illegible]	37.0	326.0
1951	1,224.6	9.6	117.6	44.9	549.8	8.4	102.9	37.1	454.3
1952	1,135.5	7.3	82.9	42.7	484.9	11.3	128.3	38.7	439.4
1953	1,221.6	8.0	97.7	38.7	472.8	14.3	174.7	39.0	476.4
1954	1,386.5	7.9	109.6	39.8	551.8	14.0	194.1	38.3	531.0
1955	1,608.5	8.2	131.9	36.5	587.1	15.5	249.3	39.8	640.2
1956	1,613.0	8.7	140.4	32.6	525.8	20.2	325.8	38.5	621.0
1957	1,920.8	8.0	153.7	30.9	593.5	18.9	363.0	42.2	810.6
1958	1,594.8	8.6	137.2	32.9	524.7	19.0	303.0	39.5	629.9
1959	1,527.6	6.2	94.7	28.8	439.9	21.6	330.0	43.4	663.0
1960	1,727.7	6.4	110.6	27.0	466.5	26.6	459.5	40.0	691.1
1961	1,879.8	11.4	214.3	19.9	374.1	24.8	466.2	43.9	825.2
1962	1,658.4	7.2	119.4	18.1	300.2	21.2	351.6	53.5	887.2
1963	1,899.5	12.6	239.3	19.1	362.8	24.2	459.7	44.1	837.7
1964	2,202.1	12.1	266.5	19.1	420.6	24.9	548.3	43.9	966.7
1965	2,313.3	15.7	363.2	18.1	418.7	25.3	585.3	40.9	946.1

TABLE III-12

Disaggregation: Service Imports, 1949-1965
(in million pesos, constant 1955 prices)

		M_x		M_y		M_i		M_R	
Year	TOTAL	%	Value	%	Value	%	Value	%	Value
1949	372.3	5.5	20.5	32.0	119.1	3.7	13.8	58.8	218.9
1950	335.9	2.7	9.1	24.6	82.6	2.5	8.4	70.2	235.8
1951	337.4	3.5	11.8	28.3	99.5	3.0	10.1	65.2	220.0
1952	360.5	2.9	10.5	29.1	104.9	4.4	15.9	63.6	229.2
1953	379.4	2.4	9.1	22.4	85.0	4.1	15.6	71.1	269.7
1954	447.5	2.4	10.7	23.1	103.4	4.4	19.7	70.1	313.7
1955	530.5	2.6	13.8	23.2	123.1	4.8	25.4	69.4	368.2
1956	532.0	2.5	13.3	21.8	116.0	5.9	31.4	69.8	371.3
1957	603.2	2.6	15.7	23.2	139.9	6.1	36.8	68.1	410.8
1958	434.2	3.2	13.9	22.2	96.4	7.0	30.4	67.6	293.5
1959	433.4	1.7	7.4	19.9	86.2	5.8	25.2	72.6	314.6
1960	437.3	0.9	4.4	19.3	94.0	7.3	35.6	72.5	353.3
1961	461.2	3.7	17.1	22.7	104.7	8.2	37.8	65.4	301.6
1962	576.6	1.9	11.0	31.2	179.9	5.7	32.9	61.2	352.8
1963	448.5	3.3	14.8	29.4	131.9	6.3	28.3	61.0	273.5
1964	463.9	3.9	18.1	24.6	114.1	8.1	37.6	63.4	294.1
1965	549.7	4.2	23.1	26.5	145.7	6.8	37.4	62.5	343.5

TABLE III-13

Disaggregation of Imports, by Merchandise and Service Components, 1949-1965
(in million pesos, constant 1955 prices)

Year	M_x			M_y			M_i			M_R		
	Mdse.	Services	Total	Mdse.	Services	Total	Mdse.	Services	Total	Mdse.	Services	Total
1949	200.3	20.5	220.8	644.7	119.1	763.8	133.0	13.8	146.8	483.7	218.9	702.6
1950	82.8	9.1	91.9	393.0	82.6	475.6	79.3	8.4	87.7	326.0	235.8	561.8
1951	117.6	11.8	129.4	549.8	95.5	645.3	102.9	10.1	113.0	454.3	220.0	674.3
1952	82.9	10.5	93.4	484.9	104.9	589.8	128.3	15.9	144.2	439.4	229.2	668.6
1953	97.7	9.1	106.8	472.8	85.0	557.8	174.7	15.6	190.3	476.4	269.7	746.1
1954	109.6	10.7	120.3	551.8	103.4	655.2	194.1	19.7	213.8	531.0	313.7	844.7
1955	131.9	13.8	145.7	587.1	123.1	710.2	249.3	25.4	274.7	640.2	368.2	1008.4
1956	140.4	13.3	153.7	525.8	116.0	641.8	325.8	31.4	357.2	621.0	371.3	992.3
1957	153.7	15.7	169.4	593.5	139.9	733.4	363.0	36.8	399.8	810.6	410.8	1221.4
1958	137.2	13.9	151.1	524.7	96.4	621.1	303.0	30.4	333.4	629.9	293.5	923.4
1959	94.7	7.4	102.1	439.9	86.2	526.1	330.0	25.2	355.2	663.0	314.6	977.6
1960	110.6	4.4	115.0	466.5	94.0	560.5	459.5	35.6	495.1	691.1	353.3	1044.4
1961	214.3	17.1	231.4	374.1	104.7	478.8	466.2	37.8	504.0	825.2	301.6	1126.8
1962	119.4	11.0	130.4	300.2	179.9	480.1	351.6	32.9	384.5	887.2	352.8	1240.0
1963	239.3	14.8	254.1	362.8	131.9	494.7	459.7	28.3	488.0	837.7	273.5	1111.2
1964	266.6	18.1	284.6	420.6	114.1	534.7	548.3	37.6	585.9	966.7	294.1	1260.8
1965	363.2	23.1	386.3	418.7	145.7	564.4	585.3	37.4	622.7	946.1	343.5	1289.6

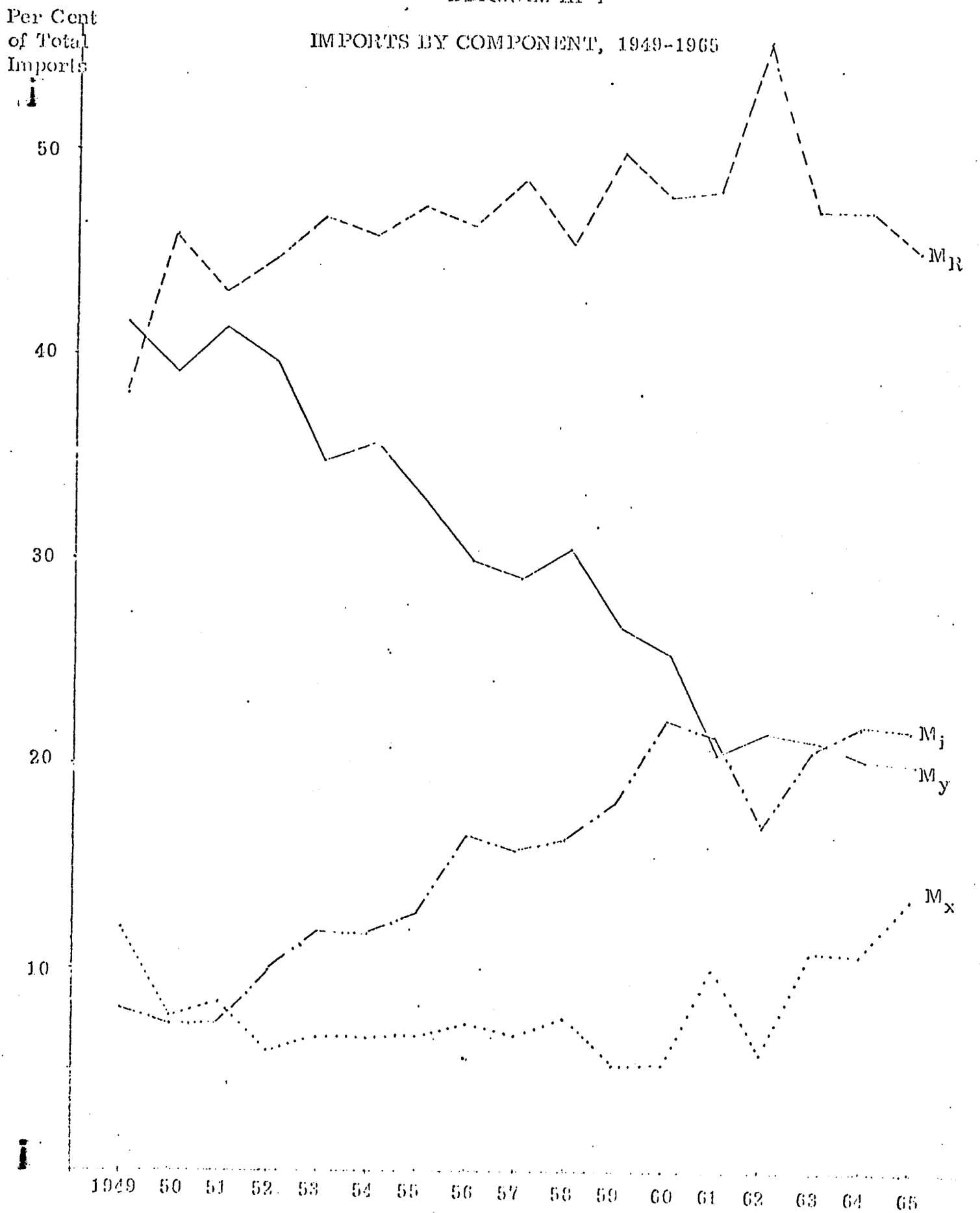
TABLE III-14

Imports: Total and by Composition; Agricultural (M_x), Finished Industrial Consumers' (M_y), Finished Capital (M_i), All Finished Industrial (M_f) and Intermediate (M_R), 1949-1965
(in million pesos, constant 1955 prices)

Year	Total Imports (M)	M_x		M_y		M_i		$M_f = M_y + M_i$		M_R	
		Value	% of Tot.	Value	% of Tot.	Value	% of Tot.	Value	% of Tot.	Value	% of Tot.
1949	1834.0	220.8	12.0	763.8	41.7	146.8	8.0	910.6	49.7	702.6	38.3
1950	1217.0	91.9	7.6	475.6	39.0	87.7	7.2	563.3	46.2	561.8	46.2
1951	1562.0	129.4	8.3	645.3	41.3	113.0	7.2	758.3	48.5	674.3	43.2
1952	1496.0	93.4	6.2	589.8	39.4	144.2	9.7	734.0	49.1	668.6	44.7
1953	1601.0	106.8	6.7	557.8	34.8	190.3	11.9	748.1	46.7	746.1	46.6
1954	1834.0	120.3	6.6	655.2	35.7	213.8	11.7	869.0	47.4	844.7	46.0
1955	2139.0	145.7	6.8	710.2	33.2	274.7	12.8	984.9	46.0	1008.4	47.2
1956	2145.0	153.7	7.2	641.8	29.9	357.2	16.6	999.0	46.5	992.3	46.3
1957	2524.0	169.4	6.7	733.4	29.1	399.8	15.8	1133.2	44.9	1221.4	48.4
1958	2029.0	151.1	7.5	621.1	30.6	333.4	16.4	954.5	47.0	923.4	45.5
1959	1961.0	102.1	5.2	526.1	26.8	355.2	18.1	881.3	44.9	977.6	49.9
1960	2215.0	115.0	5.2	560.5	25.3	495.1	22.4	1055.6	47.7	1044.4	47.6
1961	2341.0	231.4	9.9	478.8	20.5	504.0	21.5	982.8	42.0	1126.8	48.1
1962	2235.0	130.4	5.8	480.1	21.5	384.5	17.2	864.6	38.7	1240.0	55.5
1963	2348.0	254.1	10.8	494.7	21.1	488.0	20.8	982.7	41.9	1111.2	47.3
1964	2666.0	284.6	10.7	534.7	20.0	585.9	22.0	1120.6	42.0	1260.8	47.3
1965	2863.0	386.3	13.5	564.4	19.7	622.7	21.8	1187.1	41.5	1289.6	45.0

DIAGRAM III-4

IMPORTS BY COMPONENT, 1949-1965



inspection that the relative shares of the four components of total imports have changed considerably. Thus, while growth and structural change have not significantly altered the aggregate import ratio, they have produced substantial changes in the composition of imports.

Imports of intermediate goods and services, M_R, have consistently been the dominant category--except, of course, for the atypical rehabilitation year, 1949. During the period 1950-65, imports of intermediate goods and services rose from about 45 per cent of total imports in the early 1950s to a peak of 56 per cent in 1962. In the last three years of the period, 1963-65, they fell back to about 47 per cent of total imports. Using three-year averages for the initial and terminal values, these imports grew at the rate of 5.1 per cent per year between 1950 and 1965. Thus, imports of intermediate goods and services grew more rapidly than total imports (4.8 per cent) and almost as rapidly as GNP (5.4 per cent calculated on the same basis). The ratio of imported intermediate goods and services to gross national product, therefore, declined slightly between 1950-52 and 1963-65 from 9.7 per cent to 9.3 per cent. In other words, growth and structural change in the Philippines have continued to be heavily dependent on importation of intermediate goods and services. More intensive analysis of this phenomenon is undertaken in later sections.

Imports of finished industrial goods, M_f, are shown in Diagram III-4 disaggregated into the two components, capital goods, M_i, and finished industrial consumers goods, M_y. Significant changes in both, as shares of total imports, have occurred during the period. The share of imported industrial goods fell from about 40 per cent of total imports in 1949-51 to 20 per cent in 1963-65, reflecting substantial import substitution in this category. Beginning in 1961, however, the decline in the share of this category ceased, reflecting a marked change in the rate of import substitution.

Imported finished capital goods showed the reverse trend, rising as a share of total imports from about 7 per cent in 1949-51 to about 22 per cent in 1963-65. After 1961, however, the growth of this category's share ceased. Excluding the year 1949, we find the ratio of imported capital goods averaging 1.7 per cent of GNP for 1950-52, compared to a substantially higher percentage in 1963-65 of 4.3. This change is reflected in the fact that imported capital goods grew at a more rapid rate than GNP over this period; i.e., averaging 13 per cent per year and 5.4 per cent, respectively (using three-year averages for initial and terminal values).

Imports of finished agricultural goods, M_x, as a share of total imports, were relatively stable during the decade of the 1950s, averaging

7 per cent in 1950-52 and 6 per cent in 1958-60. Beginning in 1961, however, a sharp increase in agricultural imports appeared and continued (with the exception of 1962) through 1965. During the five-year period 1961-65 the share of agricultural imports rose to an average of 10 per cent and stood at 13.5 per cent in 1965. During the period 1950-60, agricultural imports grew at an average rate of 2 per cent per year.[16] From 1960 to 1965, however, their rate of growth increased to an average of about 28 per cent per year. Rapid growth of agricultural imports in recent years is a marked factor in the overall import composition, a change which will receive attention in later sections.

5. The Foreign Nexus: Summary

The juncture balance for each year, 1949-65, showing all inflows and outflows associated with the foreign nexus in our framework (see Diagram III-1), is presented in Table III-15. This table offers a synoptic view of the dynamic behavior of the flows discussed in this section. The reader will note that only three types of imports are

---

[16] 1949 is excluded and three-year averages are used for initial and terminal values.

TABLE III-15

Foreign Nexus: Juncture Balance, 1949-1965
(million pesos, constant 1955 prices)

	INFLOWS				OUTFLOWS			
Year	M_x	M_f	M_R	Total (M)	E_x	E_y	A	Total (E + A)
1949	221	911	702	1,834	805	366	663	1,834
1950	92	563	562	1,217	946	333	-62	1,217
1951	130	753	674	1,562	1,105	350	107	1,562
1952	93	734	669	1,496	1,050	457	-11	1,496
1953	107	748	746	1,601	1,134	453	14	1,601
1954	120	869	845	1,834	1,253	455	126	1,834
1955	146	985	1,008	2,139	1,287	546	306	2,139
1956	154	999	992	2,145	1,401	605	139	2,145
1957	170	1,133	1,221	2,524	1,404	587	533	2,524
1958	151	955	923	2,029	1,290	465	274	2,029
1959	102	881	978	1,961	1,219	583	159	1,961
1960	115	1,056	1,044	2,215	1,393	585	237	2,215
1961	231	983	1,127	2,341	1,362	687	292	2,341
1962	130	865	1,240	2,235	1,441	657	137	2,235
1963	254	983	1,111	2,348	1,591	659	98	2,348
1964	285	1,121	1,260	2,666	1,635	794	237	2,666
1965	387	1,188	1,293	2,868	1,748	976	144	2,868

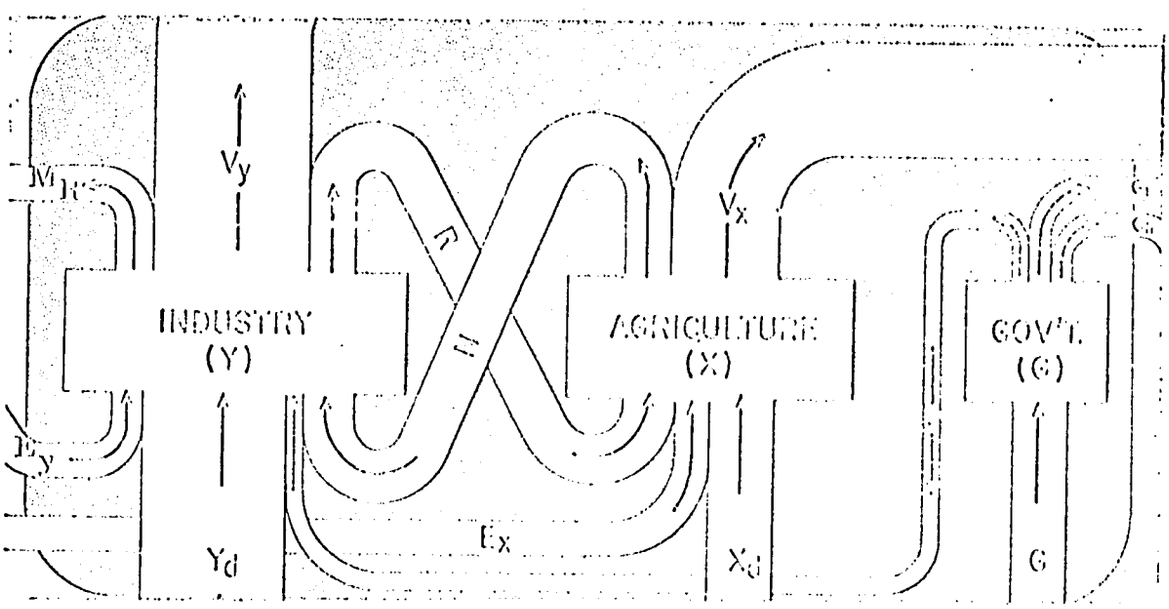
distinguished in the table: finished agricultural goods, M_x, finished industrial goods, M_f, and intermediate goods, M_R. For the disaggregation of M_f, finished industrial goods imports, the reader may refer to Table III-13.

Exports are disaggregated, as above, into those originating from the agricultural sector, E_x, and those originating from the nonagricultural sector, E_y. The balancing item between imports and exports is capital inflow, A.

B. THE PRODUCTION NEXUS

The production nexus is shown in Diagram III-5. Three sectors are distinguished: industry, agriculture, and government. Conceptually, government productive activity is defined as the provision of collective consumption services; agricultural production is defined as productive activity which creates organic output by a process in which land is involved in an essential way; and industrial production is all nonagricultural private productive activity. Statistical implementation of these concepts, of necessity, makes adjustments for national accounting procedures. Such adaptations of the conceptual definition of these sectors to estimates from national accounts data are discussed below, where appropriate.

DIAGRAM III-5: PRODUCTION NEXUS



1. Value Added Estimates: Sources and Methods

Value added estimates for each sector in the production nexus are basic to the national income accounting framework (see Diagram I-1) as applied in the Philippines and Thailand. The estimates are derived in such a way that when value added is aggregated for the three production sectors, industry, agriculture, and government (V_y, V_x, and V_g, respectively)[17] it equals gross national product; i.e.:

$$GNP = V_y + V_x + V_g$$

In the Philippines, national account estimates traditionally have been estimated on this basis; i.e., the value of the overall aggregates (national income, gross national product, etc.) were built up from the supply side and no independent estimates were made from the demand side.[18] This estimation process is begun by deriving net value added

---

[17]Government value added, V_g, equals government purchases of primary factors from industry, G_h, plus government purchases of primary factors from agriculture, G_L.

[18]In mid-1967, however, the National Economic Council issued preliminary estimates independently derived from the demand (expenditure) side for the years 1962 through 1966. These estimates are not used in this study for reasons stated later in this section.

(income originating) in several economic activities.[19] These are aggregated to obtain national income (net national product) at factor cost. Indirect taxes and depreciation are estimated independently and added to net national product at factor cost to obtain gross national product. Aggregate demand components of GNP (consumption plus investment plus government expenditures plus exports less imports) are derived by estimating investment, government consumption, exports less imports, and then obtaining private consumption as a residual from GNP as estimated from the aggregate supply side.

Given the aggregate supply-based nature of national account estimates in the Philippines for the 17-year time series used in this study, our aggregate estimates are also built up from the supply side. Since official (NEC) estimates of net value added are accepted, the only problem is the classification of these estimates among our production sectors, industry, agriculture, and government. Agricultural and government net value added, as presented in the Philippine accounts, are used as the basis

---

[19] Both current and constant (1955) price series for value added are presented for the following economic activities: agriculture, mining, manufacturing, construction, trade, transportation and communication, and services. Services are broken down into five components, including government. It should be remembered that our estimates for value added--as for all variables in our system--are made in constant (1955) prices. Hence, the NEC constant price series are employed for our purposes.

for our estimates for these sectors; the remainding net value added is allocated to our broad "industry" sector (i.e., private nonagricultural net value added).

To obtain gross value added for industry and agriculture (V_y and V_x, respectively), indirect taxes and depreciation are allocated between industry and agriculture and added to net value added for these sectors.[20] In the absence of other data, the National Economic Council's estimates of agricultural and industrial depreciation, as shares of total depreciation,

---

[20] In the case of government there is no difference between gross and net value added. Government value added is shown in the official (National Economic Council) accounts as government services which, according to the NEC (The Statistical Reporter, Vol. VIII, No. 2, April-June 1964, p. 34) "consists of salaries, wages, and supplements paid to employees, contribution and all similar exchange for services rendered by employees of the national and local government and government corporations." 'Government expenditures on salaries and wages'--shown in the government account, however, do not agree with the estimates for government services prior to 1959. Hence, estimates for 'government services' in the NEC accounts were consistently used as our measure of V_g. To satisfy ourselves on the accuracy of this measure, tests were conducted for the years 1954 and 1960. Reports of the Auditor General (on government expenditures) were examined for these years, and the NEC estimates for government services were found to show only a negligible difference from the total of all salary and wage payments, explicit and implicit, reported by the Auditor General.

It should be noted that the NEC definition of government value added excludes both rent payments by government (for office space and other facilities) and profits of government corporations. Rent payments are estimated to equal less than 1 per cent of employee compensation.

were used to allocate total depreciation between agriculture and industry. It should be emphasized that our estimate of the value of total depreciation differs from the NEC estimates for all years in the 1949-65 series. This difference is attributable to our having made independent estimates for both savings and depreciation.[21] Our estimates for these variables are compared with NEC estimates and discussed below in Section C, "The Income Nexus."

The allocation of indirect taxes (as reported by NEC)[22] between agriculture and industry was undertaken by assuming that all indirect taxes are levied upon industrial products but that the incidence falls upon final consumers of these products. The annual yields were then distributed on the basis of the ratio of each sector's expenditure on industrial goods and services relative to total domestic expenditure on industrial goods and

---

[21] Our estimates for savings may be found in Section D. Our estimates for depreciation and its allocation between industry and agriculture are presented in Appendix IV, Tables A-IV-8 and A-IV-9.

[22] Indirect taxes, less subsidies, in Philippine national accounting, in general, are estimated in accordance with U. N. Statistical Office procedures. Profits of most government enterprises are included in reported indirect taxes and deficits in subsidies. The large social insurance complex is correctly excluded here, but their current surplus is recorded as "property income of government" and eventually accounted as government savings.

services.[23] The methods used to estimate each sector's disposable income, savings, consumption, and its expenditure breakdown between industrial and agricultural goods and services are described in Section C, "The Income Nexus."

2. Reliability of Philippine National Account Estimates: Value Added Approach

Detailed evaluations of the Philippine national account estimates are already available.[24] For this reason our own evaluation is limited to observations on the reliability of those parts of Philippine national accounts which are central for the statistical implementation of our national

---

[23]The basic information for deriving these ratios was obtained from our own estimates of the variables in the income disposition nexus. Since these depend on value added flows, the first ratios to split indirect taxes were derived from our first series of estimates for the entire system. They were then corrected when the present series of estimates were completed. A slight discrepancy between the ratios employed and the actual ones implicit in our final estimates results from not continuing the process of iteration.

[24]See Clarence L. Barber, "National Income Estimates in the Philippines," Philippine Economic Journal, Vol. IV, No. 1 (First Semester 1965), pp. 64-96. Subsequent to Mr. Barber's review, Philippine national accounts were reviewed by Emanuel Levy of the International Bank. Mr. Levy has submitted several excellent reports to the Bank, though none have been published. It would be presumptuous to attempt to duplicate here Mr. Levy's excellent evaluation.

income accounting framework. The subject is discussed in this section because Philippine value added estimates have been accepted as presented by the National Economic Council, and these estimates are basic to the entire system, both in the official Philippine series and in our own.

The expert evaluations that have been made of Philippine national accounts in recent years agree that production estimates, in general, are superior to factor payment estimates. Underlying this conclusion is the fact that factor payment estimates are not made on the basis of direct measurement but rely upon fixed percentage assumptions to allocate national income among compensation of employees, entrepreneurial and property income of persons, private corporate income, and property income of government. The percentages used for this purpose derive from assumptions employed for 1948 in the Central Bank's (Department of Economic Research) first estimates covering the period 1946-51. This procedure of employing fixed ratios over time obviously produces inadequate results for intertemporal analysis. Accordingly, the factor payment series in the official estimates are not employed in our statistical application. Rather, it is assumed that all agricultural value added emerges as agricultural sector income, that all industrial value added emerges as industrial sector income, and that government value added is split between income to agricultural and industrial households. This means

that the NEC breakdown, which still employs the old 1948 ratios for income distribution as well as for factor shares, may be avoided in estimating income distribution between the agricultural and nonagricultural sectors.

The official (NEC) value added series is based on substantially different sources and methods for each economic activity covered. Among the three production sectors in our framework (agriculture, industry, and government), basic data employed for estimation appear to be most satisfactory in the case of government. The use of "compensation of employees" as the underlying data for estimating government provision of collective consumption services (government value added) does present some problems, but they are problems of method rather than data. As noted earlier, governmental rental payments (though relatively small) should be included in government value added. Official estimates include in "compensation of employees" employment in government enterprises, even though this component should be recorded under the appropriate activity rather than under government.[25] Operating profits of these corporations are not, however, recorded in government value added (which is desirable),

---

[25]This correction was made in the "new" NEC national income series, 1962-66, published in The Statistical Reporter, Vol. XI, No. 2 (April-June 1967).

but they are recorded as a part of government income and, hence, added to government savings (which is undesirable). Finally, there are also problems associated with conversion from the government's fiscal year basis to the national accounts calendar year basis. In general--despite these methodological problems--the relatively firm empirical basis behind government value added estimates provide an adequate measure of both the levels and annual changes in government collective consumption activities.

Agricultural value added estimates are built from annual reports of total agricultural output and prices published in the Crop and Livestock Survey (Bureau of Agricultural Economics) and other annual data prepared by the Department of Agriculture and Natural Resources. While this empirical basis behind the estimates may be considered satisfactory on the basis of data standards in less developed countries, serious problems of methodology exist with regard to the way value added estimates are derived from the total output data. The major problem involves an unsatisfactory procedure for separating nonfactor costs (intermediate goods, depreciation, etc.) from value added. Ratios employed to derive value added from total output value in the first postwar national income estimates (1946-51) have been retained throughout the

succeeding years.[26] This procedure seriously limits the accuracy of NEC's estimate of agriculture's value added; for by failing to subtract from total value of output what must be increasing nonfactor inputs, the NEC estimate, presumably, has led to a progressively greater overstatement of value added. Our independent estimates of intermediate goods flows to agriculture (see below), however, provide a basis for evaluating the magnitude of this problem.

Private nonagricultural (industrial) value added is estimated separately for each of the several types of activity which have been classified from the Philippine national accounts into this broad sector. These include manufacturing, mining, construction, transportation and communication, trade, and services. Although there is some annual empirical input behind value added estimates for each of these activities, the empirical basis for annual estimates varies considerably. Moreover, there are problems caused by a failure to adapt estimation procedures to the changing structure of the economy, particularly on the matter of distinguishing the value of total output from value added (which, as noted above, also is true of estimates of agricultural value added).

---

[26] For several crops, this problem has been corrected in the "new" national income series, 1962-66. See The Statistical Reporter, Vol. XI, No. 2 (April-June 1967).

The empirical bases for estimating the value of gross nonagricultural output, in general, consist of Central Bank indices which are used as either direct or indirect indicators. In the case of manufacturing, direct indicators are used. Since 1960, Central Bank indices of physical volume of output and wholesale prices have been employed to obtain total value of output by extrapolating from the value estimated for 1960. Annual total value of output for 1960 and prior years had been estimated from reports filed by individual firms with the Central Bank. Many experts, however, feel that the firms reporting did not constitute a satisfactory sample and that there may be problems with "blowing up" the reported numbers to estimate total output.

Moreover, the estimates of value added for manufacturing suffer from the use of fixed ratios between value added and total value of output. The 1960 Survey of Manufactures suggests that the ratios consistently employed since the original 1946-51 estimates are too high in virtually all branches of manufacturing. This suggests that the official estimates of value added in manufacturing contain an upward bias which, on these grounds, affects the entire time series. It has frequently been pointed out by national income experts that estimates could be improved by use of the

annual Surveys of Manufactures, but this has not been done--apparently to maintain the consistency of method and sources in the time series.[27]

Mining is the only industry for which indicators of total value of output are not used. In this case, direct estimates are supplied by the Bureau of Mines. However, a fixed ratio of value added to total value of output is employed, based on data from mining companies obtained in 1959.

For the remaining branches, a direct data base is employed for only (private) educational and professional services and some components of construction. While value added estimates for educational and professional services may be considered relatively satisfactory, the procedures employed for construction result in perhaps the weakest value added estimates for any activity in the nonagricultural sector. Two observations will serve to make this point. First, private construction for the country as a whole is estimated on the basis of estimated value in the Manila area (based on construction permits which provide estimated value) and a fixed ratio (30 per cent) between Manila and the total.

---

[27] This change was made in the "new" national income series, covering the years 1962-64, and published in The Statistical Reporter, Vol. XI, No. 2 (April-June 1967).

Secondly, farm construction is handled in a very unsatisfactory way--an absolute figure (10 million pesos) is carried from the 1946-51 estimates throughout the later series.[28]

Indirect indicators are used to estimate value added by transportation and communication, trade, and those services not discussed above. No direct estimates have been made since the 1946-51 estimates, and the indicators are used for extrapolations for subsequent years. Central Bank indices of gross sales, by the relevant component, are employed as indicators for transportation and trade. Central Bank indices for employment and average monthly earnings are used for recreational, personal, and other services. Rental value of owner-occupied dwellings is estimated from a combination of 1956 household survey data and population projections based on the 1960 Census of Population.

In general, therefore, it can be concluded that the accuracy and reliability of value added estimates appear to vary considerably by economic activity. There is, however, some use of empirical indicators

---

[28]It should be noted that corrections for both of these problems have been made in the "new" national income series covering the years 1962-66 and published by the NEC in The Statistical Reporter, Vol. XI, No. 2 (April-June 1967). See especially "Technical Notes," pp. 34-35.

for all activities. Despite the problems of methodology referred to, it is likely that the estimates reflect general trends of value added by our major sectors over time. It is doubtful, however, that the sources and methods employed reflect annual changes, particularly for the nonagricultural sector. Even so, the annual changes which are reflected are likely to be somewhat more significant for our broad sector aggregates than for the narrower branches of economic activity reported in the Philippines accounts.

The New National Account Series, 1962-1966

In mid-1967 the National Economic Council published a revised series of national account estimates for the years 1962-66.[29] This series appeared after our aggregate estimates for the Philippines had been completed. No effort is made to incorporate the new series into our estimates. This decision has been made for several reasons. First, the new series covers only a five-year period, and it is inconsistent with the old series which serves as the basis for our value added estimates, 1949-65.

---

[29] National Economic Council, The Statistical Reporter, Vol. XI, No. 2 (April-June 1967), pp. 1-36. It is reported in this issue that the revisions will eventually be carried back to 1956 and also linked with the earlier series for the entire postwar period.

Longer-run, intertemporal analysis, therefore, is not possible on the basis of the new series. Second, the major improvements in the new series apply to parts of the national accounts system on which our own estimates were not based; i.e., consumption, savings, capital formation, and the foreign sector variables. The NEC's revised estimates of these aggregates, employing considerably improved data and methods, are useful, however, in that they enable us to assess our own estimates by comparing them with NEC's for the four years in which the two series overlap (1962-65). Third, for those parts of the NEC national accounts upon which our estimates rely heavily or exclusively, the revised and the earlier series do not show significant differences in results. Although there are significant differences in some of the components of the value added aggregates, the aggregates themselves do not show much variation between the two NEC series. The average annual difference in NEC's estimates of total value added, for example, is 2 per cent for the four years 1962-65.[30] The annual difference between the two value added estimates can be seen from Table III-16. There is a slight difference, however, in the agricultural and nonagricultural contributions. Agricultural value

---

[30] There is a slight difference in concept. The new series presents value added as net domestic product at factor cost; the old series presented value added as net national product at factor cost.

added is consistently slightly higher relative to nonagricultural value added in the revised estimates.[31]

Table III-16 compares the value added estimates from the revised and the earlier NEC constant price series for the four years, 1962-65, for which comparison can be made. Differences between the two series are greatest for the agricultural component, where the revised estimates show a consistently higher level (varying from 4.8 per cent higher in 1962 to 8.7 per cent higher in 1965). Estimates for government value added also differ. They are consistently lower in the new series than the old, especially for 1962 when the difference shown is 9.5 per cent. Apart from the use of slightly different deflators in the two series, these differing results for government may be attributed mainly to a significant improvement in estimating government value added in the new series. Government corporations have been removed from the government sector and assigned to the appropriate branch of private economic activity. This

---

[31] The slight discrepancy between the two series on this score can be seen from the following comparison, by year, of the relative contributions of agriculture and nonagriculture (including government):

	1962		1963		1964		1965	
	Old	New	Old	New	Old	New	Old	New
Agriculture	.32	.33	.32	.33	.30	.32	.30	.32
Nonagriculture	.68	.67	.68	.67	.70	.68	.70	.68

TABLE III-16

Value Added,* NEC Estimates, Old and New Series, 1962-1965
(in million pesos, constant 1955 prices)

	1962			1963			1964			1965		
	Old Series	New Series	% Diff.	Old Series	New Series	% Diff.	Old Series	New Series	% Diff.	Old Series	New Series	% Diff.
Agriculture	3,360	3,521	4.8	3,522	3,794	7.7	3,440	3,712	7.9	3,617	3,930	8.7
Industry	6,111	6,230	1.9	6,424	6,603	2.8	6,838	6,925	1.3	7,164	7,298	1.9
Government	940	850[a]	-9.6	990	965[a]	-2.5	1,039	999[a]	-3.8	1,091	1,061[a]	-2.7
Total	10,411	10,601	1.8	10,936	11,362	3.8	11,317	11,636	2.8	11,872	12,289	3.5

*Old Series: Net national product at factor cost; New Series: net domestic product at factor cost.

Sources: Statistical Reporter, Vol. IX, No. 2, April-June 1965.
Statistical Reporter, Vol. X, No. 2, April-June 1966.
Statistical Reporter, Vol. XI, No. 2, April-June 1967.

[a]In the new series, government services are shown only in current prices. The constant price estimate has been calculated by using the deflator shown for government's "compensation of employees" component.

will, of course, cause the new series to show a correspondingly higher value added for industry (private nonagriculture) than the old series.

For the four years compared, however, estimates of value added by industry (using our concept of industry) are not significantly different. The estimates differ by an average of 2.3 per cent for the four years, the discrepancy ranging from 1.3 per cent for 1964 to 2.8 per cent for 1963. This result is somewhat surprising, given the substantial changes in estimation sources and procedures in the new series. Yet it means that we can employ the old series value added estimates for industry with some confidence since changes in estimation procedures used in the new series appear to be decided improvements. In general, a more satisfactory data base has been employed for several components of industrial value added, and there have also been significant improvements in methodology. Chief among these is the use of new, more empirically-based ratios for value added to total output value in several of the important branches of the broad industrial sector. These have produced pronounced changes in the estimates of most of the components of industrial value added; for example, manufacturing (consistently higher in the new estimates), construction (consistently higher), transportation and communication (consistently higher), commerce (consistently higher), and services (consistently lower). In the service category, substantially lower estimates are shown for

"rental value of owner-occupied dwellings," an adjustment which experts were agreed was essential to improve Philippine national account estimates.[32] Since our aggregate national income accounting framework and the analysis based on it do not utilize these components, however, these changes do not bear on our estimates.

The major revision contained in the new series is the addition of an independent estimate of gross national product from the expenditure (demand) side. This was made possible by a direct estimation of personal consumption expenditures which, in the old series, had been derived as a residual. Several data sources, including the household surveys, are utilized. In addition, the estimates of capital formation have been considerably improved by greater use of basic data for construction and a more realistic estimate of capital formation in the agricultural sector. In place of a fixed value for each year, the new estimates use data from the last survey of capital formation in agriculture, with annual updating from appropriate economic indicators. These new NEC estimates have important implications for our own estimates of flows involving the income disposition nexus, and the subject is discussed in Appendix V.

---

[32] Educational services (private) are consistently higher in the new series, recreational and personal services approximately the same, professional services somewhat higher.

3. Value Added Estimates: Results, 1949-1965

Three value added series were derived on the basis of the sources and methods discussed in the two preceding sections: gross value added (i.e., including indirect taxes and depreciation) for agriculture and industry and net value added for government. The series (1949-65) for agriculture and industry are presented in Tables III-17 and III-18, respectively. They show net value added for these two sectors (as estimated by the National Economic Council), indirect taxes as allocated between the two sectors, and depreciation for each sector as derived from our revised savings estimates.

We accept the National Economic Council estimates for government value added, and no addition of indirect taxes and depreciation are required for this sector. This series is shown as V_g in Table III-19 (Column 3) along with the gross value added estimates for agriculture and industry. Table III-19 also shows our series for gross national product (Column 4), obtained by adding our estimates of (gross) value added for the three sectors, agriculture (V_x); industry (V_y); and government (V_g).

TABLE III-17

Agriculture: Gross Value Added, by Components, 1949-1965
(million pesos, constant 1955 prices)

	Net Value Added	Indirect Taxes	Depreciation	Gross Value Added (V_x)
1949	2,033	134	45	2,212
1950	2,214	156	71	2,441
1951	2,453	199	69	2,721
1952	2,597	243	60	2,900
1953	2,900	255	71	3,226
1954	3,039	282	107	3,428
1955	3,161	290	97	3,548
1956	3,190	283	105	3,578
1957	3,249	289	100	3,638
1958	3,388	290	108	3,786
1959	3,235	204	89	3,528
1960	3,093	277	99	3,469
1961	3,262	307	116	3,685
1962	3,360	313	109	3,782
1963	3,522	335	117	3,974
1964	3,440	352	93	3,885
1965	3,617	387	112	4,116

TABLE III-18

Industry: Gross Value Added, by Component, 1949-1965
(million pesos, constant 1955 prices)

	Net Value Added	Indirect Taxes	Depreciation	Gross Value Added (V_y)
1949	2,702	182	185	3,069
1950	2,984	190	280	3,454
1951	2,955	227	265	3,447
1952	3,155	287	242	3,684
1953	3,303	280	281	3,864
1954	3,453	320	405	4,178
1955	3,815	343	385	4,543
1956	4,443	374	430	5,247
1957	4,673	397	442	5,512
1958	4,739	387	463	5,589
1959	5,356	434	442	6,232
1960	5,564	489	510	6,563
1961	5,932	483	650	7,065
1962	6,111	521	646	7,278
1963	6,424	550	713	7,687
1964	6,838	628	598	8,064
1965	7,164	685	764	8,613

TABLE III-19

Gross National Product and Value Added Components by Agriculture (V_x); Industry (V_y); and Government (V_g), 1949-1965 (million pesos, constant 1955 prices)

	V_x	V_y	V_g	GNP ($= V_x+V_y+V_g$)
	(1)	(2)	(3)	(4)
1949	2,212	3,069	371	5,652
1950	2,441	3,454	369	6,264
1951	2,721	3,447	380	6,548
1952	2,900	3,684	459	7,043
1953	3,226	3,864	531	7,621
1954	3,428	4,178	568	8,174
1955	3,548	4,543	648	8,739
1956	3,578	5,247	661	9,486
1957	3,638	5,512	656	9,806
1958	3,786	5,589	653	10,028
1959	3,528	6,232	847	10,607
1960	3,469	6,563	862	10,894
1961	3,685	7,065	896	11,646
1962	3,782	7,278	940	12,000
1963	3,974	7,687	990	12,651
1964	3,885	8,064	1,039	12,988
1965	4,116	8,613	1,091	13,820

4. Other Production Nexus Flows

Diagram III-5 shows all production nexus flows by sector--agriculture, industry, and government--and we now proceed to discuss the remaining inflows and outflows in this nexus. For this purpose, it is convenient to present the juncture balances of each production sector for the time period covered by this study, 1949-65. These are presented for industry, agriculture, and government, respectively, in Tables III-20, III-21, and III-22.

We begin by discussing the estimates for the industrial production sector shown in Table III-20. The procedure followed was to begin with the estimates of the major outflow, value added (V_y), discussed above. The value for total output (Y) by year was then obtained by adding the values of the two other outflows; i.e., payments for imported intermediate goods (M_{F_U}) and payments for intermediate goods and services purchased from the agricultural sector (R). Payments for imported intermediate goods were available for each year from our estimates of foreign nexus variables discussed in the preceding section. Independent estimates for the remaining outflow, R, were obtained by the method described in Appendix II.

TABLE III-20

Industry Production Sector: All Variables, 1949-1965
(million pesos, constant 1955 prices)

	INFLOWS					OUTFLOWS			
	E_y	Y_g	N	Y_d	Total (Y)	M_R	V_y	R	Total (Y)
1949	366	66	734	2,942	4,108	702	3,069	337	4,108
1950	333	85	830	3,127	4,375	562	3,454	359	4,375
1951	350	91	923	3,090	4,454	674	3,447	333	4,454
1952	457	103	999	3,158	4,717	669	3,684	364	4,717
1953	453	80	1,138	3,296	4,967	746	3,864	357	4,967
1954	455	78	1,202	3,659	5,394	845	4,178	371	5,394
1955	546	70	909	4,401	5,926	1,008	4,543	375	5,926
1956	605	117	1,265	4,638	6,625	992	5,247	386	6,625
1957	587	134	1,330	5,124	7,175	1,221	5,512	442	7,175
1958	465	124	1,444	4,965	6,998	923	5,589	486	6,998
1959	583	148	1,390	5,515	7,636	978	6,232	426	7,636
1960	585	97	1,312	5,999	7,993	1,044	6,563	386	7,993
1961	687	108	1,348	6,488	8,631	1,127	7,065	439	8,631
1962	657	85	1,426	6,794	8,962	1,240	7,278	444	8,962
1963	659	89	1,496	7,045	9,289	1,111	7,687	491	9,289
1964	794	82	1,410	7,540	9,826	1,260	8,064	502	9,826
1965	976	59	1,488	7,942	10,465	1,293	8,613	559	10,465

TABLE III-21

Agriculture Production Sector: All Variables, 1949-1965
(million pesos, constant 1955 prices)

	INFLOWS				OUTFLOWS		
	E_x	X_d	R	Total (X)	V_x	N	Total (X)
1949	805	1,804	337	2,946	2,212	734	2,946
1950	946	1,966	359	3,271	2,441	830	3,271
1951	1,105	2,206	333	3,644	2,721	923	3,644
1952	1,050	2,485	364	3,899	2,900	999	3,899
1953	1,134	2,873	357	4,364	3,226	1,138	4,364
1954	1,253	3,006	371	4,630	3,428	1,202	4,630
1955	1,287	2,795	375	4,457	3,548	909	4,457
1956	1,401	3,056	386	4,843	3,578	1,265	4,843
1957	1,404	3,122	442	4,968	3,638	1,330	4,968
1958	1,290	3,454	486	5,230	3,786	1,444	5,230
1959	1,219	3,273	426	4,918	3,528	1,390	4,918
1960	1,393	3,002	386	4,781	3,469	1,312	4,781
1961	1,362	3,232	439	5,033	3,685	1,348	5,033
1962	1,441	3,323	444	5,208	3,782	1,426	5,208
1963	1,591	3,388	491	5,470	3,974	1,496	5,470
1964	1,635	3,158	502	5,295	3,885	1,410	5,295
1965	1,748	3,297	559	5,604	4,116	1,488	5,604

TABLE III-22

Government Production Sector: All Variables, 1949-1965
(million pesos, constant 1955 prices)

Year	INFLOW G	OUTFLOWS Component Y_g	G_h	G_L	Total (G)
1949	437	66	191	180	437
1950	454	85	190	179	454
1951	471	91	196	184	471
1952	562	103	236	223	562
1953	611	80	274	257	611
1954	646	78	293	275	646
1955	718	70	334	314	718
1956	778	117	340	321	778
1957	790	134	338	318	790
1958	777	124	336	317	777
1959	995	148	436	411	995
1960	959	97	444	418	959
1961	1004	108	461	435	1,004
1962	1124	184	484	456	1,124
1963	1079	89	510	480	1,079
1964	1121	82	535	504	1,121
1965	1150	59	562	529	1,150

Having thus estimated values of total output (Y) from the outflow side, individual inflows were estimated. The value of industrial exports (E_y) was obtained from the foreign nexus estimates. Values for intermediate goods sales to government (Y_g) and to agriculture (N) were estimated by methods described in Appendix II. This left the inflow, industrial output sold as goods for final domestic use (Y_d), to be derived as a residual.

Estimates for the agricultural production sector (shown in Table III-21) were obtained in essentially the same way. The major outflow, value added (V_x), has already been discussed. The other outflow, payments for intermediate goods and services from industry, was independently estimated by the method described in Appendix II. Having thus determined the value of total agricultural output (X), the sector's inflows were estimated. With intermediate goods (R) and agricultural exports (E_x) already determined, as described above, agricultural output sold as goods for final domestic use (X_d) was derived as a residual.

All government sector values (presented in Table III-22) are also now determined. Current government expenditures (G) were obtained from reported figures; value added ($V_g = G_L + G_h$) was obtained from the NEC estimates, and Y_g was obtained as a residual (a discussion of this procedure is given in Appendix II). The breakdown of V_g between factor

payments to industrial households (G_h) and agricultural households (G_L) is discussed in the section on the income nexus.

5. The Production Nexus: Performance at the Aggregate Level, 1949-1965

This section is primarily devoted to general observations on the performance of the production nexus, based on scrutiny of the time series presented.[33] The present discussion refers to the statistical results presented in Tables III-17 through III-22, with additional detail provided to facilitate examination of the performance of this nexus in terms of aggregate flows and their components.

Growth rates of sector value added and GNP for the entire period and by three sub-periods (1949-55, 1955-60, and 1960-65) are presented in Table III-23. Over the entire period (using three-year initial and terminal averages), gross national product grew at an average annual rate of 5.6 per cent. Among sector components, the highest average annual growth rate (7.6 per cent) was achieved by government value added, followed by industrial value added (6.6 per cent) and agricultural value added (3.5 per cent).

---

[33] Intensive analysis of these data to investigate the growth dynamics of the Philippine economy will be undertaken in later sections of our final report to AID.

TABLE III-23

Growth Rates: Value Added by Agriculture (V_x), Industry (V_y), Government (V_g), and Gross National Product (GNP), 1949-1965 and By Sub-periods

	V_x	V_y	V_g	GNP
1949-65 (3-year averages)	.035	.066	.076	.056
1949-55	.082	.068	.097	.075
1955-60	-.004	.076	.059	.045
1960-65	.035	.056	.048	.049

Substantial differences in the rates of growth of gross national product and its sectoral value added components are found for the three sub-periods shown. Gross national product grew at an average annual rate of 7.5 per cent during the earliest period, 1949-55. In the two later periods, its average annual growth was considerably slower, 4.5 per cent in 1955-60 and 4.9 per cent in 1960-65. Government value added showed a similar declining annual growth rate, from 9.7 per cent in 1949-55 to 5.9 per cent in 1955-60 and to 4.8 per cent in 1960-65.

Agricultural value added showed the greatest variation in growth rates by sub-periods. After impressive gains in the period 1949-55, during which an average annual growth of 8.2 per cent was achieved, agricultural value added remained almost constant over the subsequent period, 1955-60 (average annual growth was slightly negative, -0.04 per cent). In the final period 1960-65, agricultural value added grew at an average annual rate of 3.5 per cent, very near the estimated rate of growth of the population.

Industrial value added showed its highest annual growth rate (an average of 7.6 per cent) during the latter half of the 1950s. From 1949-55, its annual growth rate was slightly lower, averaging 6.8 per cent. In the final period, 1960-65, industrial value added grew at an average annual rate of 5.6 per cent, less rapidly than during either earlier period.

In general, growth momentum of all three sectors appears to have slackened considerably over the entire period, 1949-65. This general trend in the behavior of output, and its productivity aspects by sector, will be investigated in detail in our analytical study. Annual changes in the three value added components were very erratic over the 16-year period studied. For the reader's reference, the annual rates of change in gross value added, by sector, and for gross national product are presented in Table III-24.

The effects of the variations in sector growth rates on structural change can be seen from Table III-25, which shows the ratios of sector value added to gross national product for the years 1949, 1955, 1960, and 1965. Industry's share rose significantly over the period as a whole, after actually declining in the first six years. Most of the gain in industry's share occurred during the 1955-60 period, when it rose from 52 per cent of GNP to 60 per cent. Conversely, although agriculture's share rose slightly from 1949 to 1955, it declined sharply from 41 per cent of GNP to 32 per cent between 1955 and 1960. Government increased its share slightly over the period as a whole, from 6.6 per cent of GNP in 1949 to 7.9 per cent in 1965. At the close of the period studied in 1965, sector shares of GNP were, respectively, 30 per cent for agriculture, 62 per cent for industry, and 8 per cent for government.

TABLE III-24

Annual Rates of Change in Gross Value Added by Sector and in Gross National Product

Year	Agriculture (V_x)	Industry (V_y)	Government (V_g)	GNP
1949-50	.104	.125	-.005	.108
1950-51	.115	-.002	.030	.045
1951-52	.066	.069	.210	.076
1952-53	.112	.049	.157	.082
1953-54	.063	.081	.070	.073
1954-55	.035	.087	.141	.069
1955-56	.008	.155	.020	.085
1956-57	.017	.051	-.008	.034
1957-58	.041	.014	-.005	.023
1958-59	-.068	.115	.297	.058
1959-60	-.017	.053	.018	.027
1960-61	.062	.076	.039	.069
1961-62	.026	.030	.049	.030
1962-63	.051	.056	.053	.054
1963-64	-.022	.049	.050	.027
1964-65	.059	.068	.050	.064

TABLE III-25

Ratios of Sector Gross Value Added to GNP for Agriculture, Industry, and Government, 1949, 1955, 1960, and 1965

	Agriculture (V_x/GNP)	Industry (V_y/GNP)	Government (V_g/GNP)
1949	.391	.543	.066
1955	.406	.520	.074
1960	.318	.603	.079
1965	.298	.623	.079

Detailed breakdowns of total agricultural output (X) and total industrial output (Y) are found in Tables III-26 and III-27, respectively. Both are shown as the production sector's outpayments and they equal the value of the sector's output. Such outpayments include intermediate goods purchases (domestic goods for agriculture and domestic plus imported goods for industry), factor payments ("net value added"), indirect taxes, and depreciation. Net value added plus indirect taxes plus depreciation equal gross value added (V_x for agriculture and V_y for industry). These breakdowns allow us to examine the behavior of inputs comprising the total value of the two dualistic sectors' output.

Turning first to Table III-26, the agricultural sector, we observe that the ratio of intermediate goods and services, N, purchased from industry to total output did not change significantly over the period 1949-65. This ratio averaged 26 per cent for the period as a whole with annual values showing little deviation from the average except for the erratic value of 20.4 per cent in 1955. Over the same period, intermediate goods purchases rose very slightly as a fraction of total output value from 25 per cent in 1949 to 26.5 per cent in 1965.

Indirect taxes as a share of the agricultural sector's gross value added rose over the period from about 6 per cent in 1949 to 9.4 per cent in 1965. Depreciation hovered between 2 and 3 per cent of gross

TABLE III-26

Components of Total Agriculture Output Value (X), 1949-1965

Year	Total Output (X)	Domestic Intermediate Goods (N)		Gross Value Added (V_x)	Indirect Taxes		Depreciation		Net Value Added (V_x')		
		Value	% of X		Value	% of V_x	Value	% of V_x	Value	% of V_x	% of X
1949	2946	734	24.9	2,212	134	6.1	45	2.0	2,033	91.9	69.0
1950	3271	830	25.4	2,441	156	6.4	71	2.9	2,214	90.7	67.7
1951	3644	923	25.3	2,721	199	7.3	69	2.5	2,453	90.2	67.3
1952	3899	999	25.6	2,900	243	8.4	60	2.1	2,597	89.6	66.6
1953	4364	1,138	26.1	3,226	255	7.9	71	2.2	2,900	89.9	66.5
1954	4630	1,202	26.0	3,428	282	8.2	107	3.1	3,039	88.7	65.6
1955	4457	909	20.4	3,548	290	8.2	97	2.7	3,161	89.1	70.9
1956	4843	1,265	26.1	3,578	283	7.9	105	2.9	3,190	89.2	65.9
1957	4968	1,330	26.8	3,638	289	7.9	100	2.8	3,249	89.3	65.4
1958	5230	1,444	27.6	3,786	290	7.7	108	2.9	3,388	89.5	64.8
1959	4918	1,390	28.3	3,528	204	5.8	89	2.5	3,235	91.7	65.8
1960	4781	1,312	27.4	3,469	277	8.0	99	2.9	3,093	89.1	64.7
1961	5033	1,348	26.8	3,685	307	8.3	116	3.2	3,262	88.5	64.8
1962	5208	1,426	27.4	3,782	313	8.3	109	2.9	3,360	88.8	64.5
1963	5470	1,496	27.4	3,974	335	8.4	117	2.9	3,522	88.6	64.4
1964	5295	1,410	26.6	3,885	352	9.1	93	2.4	3,440	88.6	65.0
1965	5604	1,488	26.6	4,116	387	9.4	112	2.7	3,617	87.9	64.5

value added over the period. Net value added (V_x') as a fraction of gross value added fell slightly (from 92 per cent in 1949 to 88 per cent in 1965), largely because of the increasing share of indirect taxes. Over the period as a whole, there was also a tendency for net value added to fall as a share of total output value (from 69 per cent in 1949 to 64.5 per cent in 1965). This reflected the increase in the indirect tax component as well as a slight increase in intermediate goods sales.

Table III-27 is studied for changes in the composition of the industrial sector's outpayments. Purchases of domestic intermediate goods (R) from agriculture as a fraction of total industrial output showed a clear downward trend from about an 8 per cent level at the beginning of the period to a 5 per cent level at the end. Purchases of imported intermediate goods, however, showed no similarly clear trend over the period. Beginning in 1949 at 17 per cent of total industrial output, they fluctuated between 13 and 17 per cent from 1950 to 1957 and then settled between 12 and 13 per cent from 1958 to 1965.

Indirect taxes rose slightly over the period from about 6 per cent of gross value added to about 8 per cent. Excluding 1949 (when depreciation was 6 per cent of total output), depreciation fluctuated between 7 and 10 per cent of gross value added, showing no perceptible trend. Net value added (V_y), a measure of factor payments, showed a slight downward trend

TABLE III-27

Components of Total Industrial Output Value (Y), 1949-1965

Year	Total Output (Y)	Domestic Intermediate Goods (R)		Imported Intermediate Goods (M_r)		Gross Value Added (V_y)	Indirect Taxes		Depreciation		Net Value Added (V_y')		
		Value	% of Y	Value	% of Y		Value	% of V_y	Value	% of V_y	Value	% of V_y	% of Y
1949	4,108	337	8.2	702	17.1	3,069	182	5.9	185	6.0	2,702	88.0	65.8
1950	4,375	359	8.2	562	12.9	3,454	190	5.5	280	8.1	2,984	86.4	68.2
1951	4,454	333	7.5	674	15.1	3,447	227	6.6	265	7.7	2,955	85.7	66.3
1952	4,717	364	7.7	669	14.2	3,684	287	7.8	242	6.6	3,155	85.6	66.9
1953	4,967	357	7.2	746	15.0	3,864	280	7.3	281	7.3	3,303	85.5	66.5
1954	5,394	371	6.9	845	15.7	4,178	320	7.7	405	9.7	3,453	82.7	64.0
1955	5,926	375	6.3	1,008	17.0	4,543	343	7.6	385	8.5	3,815	84.0	64.4
1956	6,625	386	5.8	992	15.0	5,247	374	7.1	430	8.2	4,443	84.7	67.1
1957	7,175	442	6.2	1,221	17.0	5,512	397	7.2	442	8.0	4,673	84.8	65.1
1958	6,998	486	6.9	923	13.2	5,589	387	6.9	463	8.3	4,739	84.8	67.7
1959	7,636	426	5.6	978	12.8	6,232	434	7.0	442	7.1	5,356	85.9	70.1
1960	7,993	386	4.8	1,044	13.1	6,563	489	7.5	510	7.8	5,564	84.8	69.6
1961	8,631	439	5.1	1,127	13.1	7,065	483	6.8	650	9.2	5,932	84.0	68.7
1962	8,962	444	5.0	1,240	13.8	7,278	521	7.2	646	8.9	6,111	84.0	68.2
1963	9,289	491	5.3	1,111	12.0	7,687	550	7.2	713	9.3	6,424	83.6	69.2
1964	9,826	502	5.1	1,260	12.8	8,064	628	7.8	598	7.4	6,838	84.8	69.6
1965	10,465	559	5.3	1,293	12.4	8,613	685	8.0	764	8.9	7,164	83.2	68.5

as a share of gross value added. Net value added as a share of total industrial output hovered between 65 and 70 per cent, clearly a somewhat larger fraction in the latter half of the period than in the first half. This change reflected mainly the declining share of purchases of domestic intermediate goods.

On the demand side, export performance of the two production sectors is shown in Table III-28, and it is measured as the annual ratios of agricultural exports to agricultural gross value added and industrial exports to industrial gross value added. It will be noted that the export performance of both sectors was erratic. In general, export ratios of both sectors fell from an initial peak in 1951 (agriculture) and 1952 (industry) to a low point in 1958. Both ratios rose toward the end of the period, with the agricultural sector's export performance reaching its maximum for the entire period in 1965, but with industrial exports still below their 1952 peak.

TABLE III-28

Ratios of Agricultural Exports to Agricultural Gross Value Added (E_x/V_x) and Industrial Exports to Industrial Gross Value Added (E_y/V_y), 1949-1965

Year	E_x/V_x	E_y/V_y
1949	.3639	.1193
1950	.3875	.0964
1951	.4061	.1015
1952	.3621	.1240
1953	.3515	.1172
1954	.3655	.1089
1955	.3627	.1202
1956	.3916	.1153
1957	.3859	.1065
1958	.3407	.0832
1959	.3455	.0935
1960	.4016	.0891
1961	.3696	.0972
1962	.3810	.0927
1963	.4304	.0857
1964	.4208	.0965
1965	.4247	.1133

C. THE INCOME NEXUS

The income nexus is shown in Diagram III-6. Similar to the production nexus, three sectors are distinguished: industry, agriculture, and government. It is assumed that all factor incomes and other components of gross value added (V_y) paid out by the industrial sector are received as income by industrial households and that all gross value added (V_x) payments made by the agricultural sector are received by households within that sector. Government value added (V_g) is split between factor payments to industry (G_h) and factor payments to agriculture (G_L). Government income is obtained from tax payments by industry (T_h) and agriculture (T_L).

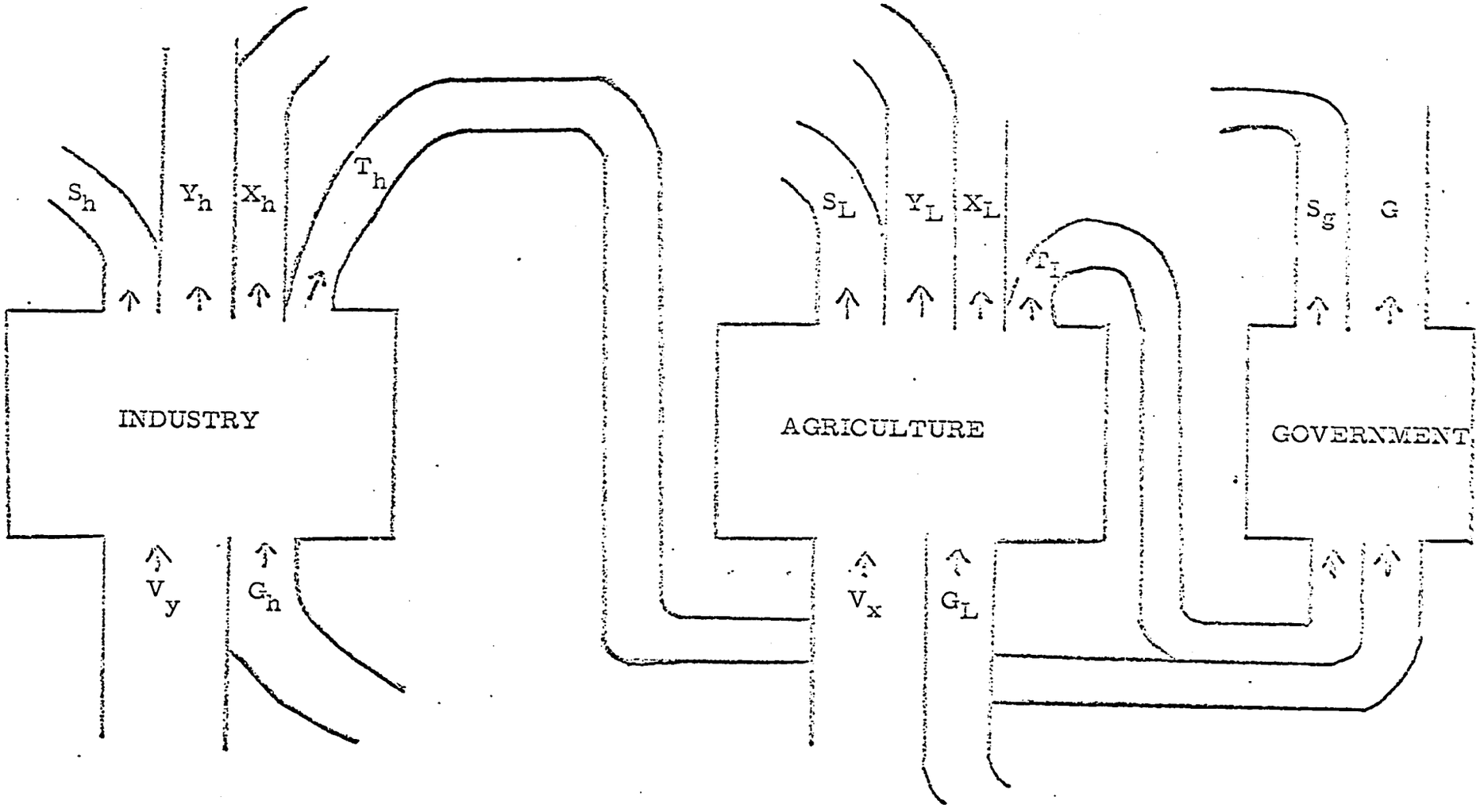
Industrial and agricultural incomes are used for tax payments (T_h and T_L), sector savings (S_h and S_L), purchases of finished industrial goods (Y_h and Y_L), and finished agricultural goods (X_h and X_L).

1. Income Nexus Inflow Estimates

Estimates of income inflows into the industrial and agricultural household sectors begin with the estimates of gross value added created by industrial and agricultural production, V_y and V_x, respectively. These are obtained from the time series estimates presented in the preceding

DIAGRAM III-6

INCOME NEXUS



section. Government factor payments are added to these internal sector inflows by estimating government factor payments to industrial households (G_h) and to agricultural households (G_L). Details on disaggregation of government value added between the two components G_h and G_L are found in Appendix III-1.

Personal income flowing into the two sectors was thus estimated for all years in the time series as:

(1) $P_h = V_y + G_h$ Personal income, industrial sector

(2) $P_L = V_x + G_L$ Personal income, agricultural sector

Government income is construed to be equal to total tax collections, T, obtained from the national income accounts and deflated to 1955 constant prices. Total taxes were disaggregated between industrial sector tax payments, T_h, and agricultural sector tax payments, T_L, by using the three major components of total taxes, corporation taxes, personal income taxes, and indirect taxes. All corporation tax payments were construed to be industrial sector tax payments. Personal income taxes were disaggregated between industrial and agricultural sector payments by using Department of Finance records of farm personal income

tax payments, 1957-64.[34] Indirect taxes were allocated between T_h and T_L on the basis of methods (discussed in the previous section) used to include them in industrial gross value added (V_y) and agricultural gross value added (V_x). In our national income accounting framework, these indirect tax payments flow from the production to the income disposition sectors as components of these gross value added streams.

Table III-29 presents our estimates of income inflows into the three income-receiving sectors, industry, agriculture, and government, for the period 1949-65. The components of the inflows into each sector described above are shown, as well as the total for the three sectors, personal income of the industrial sector (P_h), personal income of the agricultural sector (P_L), and total tax payments to the government sector (T).

---

[34]On the basis of records made available by the Statistical Division, Bureau of Internal Revenue, Department of Finance, farmers' personal income tax payments for the years, 1957-64, were used to estimate farm tax payments for the entire period, 1949-65. For extrapolation back to 1949 and forward to 1965, a trend line was fit and an equation derived. From this the share of personal income taxes allocated to the agricultural sector was estimated for each year.

TABLE III-29

Income Nexus Inflows, by Sector, 1949-1965
(in million pesos, constant 1955 prices)

	Industry			Agriculture			Government		
	V_y	G_h	Total (P_h)	V_x	G_L	Total (P_L)	T_h	T_L	Total (T)
1949	3069	191	3260	2212	180	2392	252	134	386
1950	3454	190	3644	2441	179	2620	288	151	439
1951	3447	196	3643	2721	184	2905	351	200	551
1952	3684	236	3920	2900	223	3123	432	249	681
1953	3864	274	4138	3226	257	3483	425	246	671
1954	4178	293	4471	3428	275	3703	472	282	754
1955	4543	334	4877	3548	314	3862	529	289	818
1956	5247	340	5587	3578	321	3899	586	288	874
1957	5512	338	5850	3638	318	3956	593	308	901
1958	5589	336	5925	3786	317	4103	594	314	908
1959	6232	436	6668	3528	411	3939	676	305	981
1960	6563	444	7007	3469	418	3887	747	381	1,128
1961	7065	461	7526	3685	435	4120	758	388	1,146
1962	7278	484	7762	3782	456	4233	837	418	1,255
1963	7687	510	8197	3974	480	4454	851	454	1,305
1964	8064	535	8599	3885	504	4389	930	503	1,433
1965	8613	562	9175	4116	529	4645	1,009	549	1,558

2. Estimates of Sector Income Disposition

Estimates of income disposition by the three sectors (industry, agriculture, and government) begin with total income received by these sectors, presented in Table III-29. The first step is to remove tax payments from total income received by industry and agriculture to obtain disposable income for these sectors (D_h and D_L, respectively) as follows:

(3) $D_h = P_h - T_h$ Disposable income, industrial sector

(4) $D_L = P_L - T_L$ Disposable income, agricultural sector

Disposable income available to each of these two sectors is then disaggregated between savings and consumption expenditures; i.e.,

(5) $D_h = S_h + C_h$ Industrial sector

(6) $D_L = S_L + C_L$ Agricultural sector

Similarly, government tax income is used as government savings (S_g) and to finance government current expenditures (G):

(7) $T = S_g + G$

Independent estimates of savings by the industrial and agricultural sectors were made by methods described in the following

section (III-D). Government savings were estimated from NEC data on government current expenditures and tax receipts.

Using total (personal) income and taxes for each sector, as shown in Table III-29, disposable income for industry and agriculture were obtained. Consumption expenditures for industry and agriculture were obtained as residuals, subtracting sectoral savings, presented in the next section, from the sector's disposable income. The results showing disposition of income between taxes, savings, and consumption for the industrial and agricultural sectors and between savings and current government expenditures are presented in Table III-30.

The remaining problem in estimating income disposition flows involves disaggregating the consumption expenditures of the industrial and agricultural sectors between expenditures on industrial and agricultural goods. These expenditure relationships are as follows:

(8) $C_h = Y_h + X_h$ Industrial sector consumption expenditures where Y_h = expenditures for industrial goods and X_h = expenditures for agricultural goods.

(9) $C_L = Y_L + X_L$ Agricultural sector consumption expenditures, where Y_L = expenditures for industrial goods and X_L, expenditures for agricultural goods.

Table III - 30: Personal Income, Taxes, Disposable Income, Savings and Consumption for Industry and Agriculture; Income Savings and Current Expenditures for Government, 1949-1965 (All in Million pesos, 1955 constant prices)

	Industry					Agriculture					Government		
Year	Income (P_h)	Taxes (T_h)	Disp. Income (D_h)	Savings (S_h)	Consum. (C_h)	Income (P_L)	Taxes (T_L)	Disposable Income (D_L)	Savings (S_L)	Consum. (C_L)	Income (T)	Savings (S_g)	Current Expend. (G)
1949	3,260	252	3,008	380	2,628	2,392	134	2,258	122	2,136	386	- 51	437
1950	3,644	288	3,356	557	2,799	2,620	151	2,469	147	2,322	439	- 15	454
1951	3,643	351	3,292	424	2,868	2,905	200	2,705	121	2,584	551	80	471
1952	3,920	432	3,488	411	3,077	3,123	249	2,874	132	2,742	681	119	562
1953	4,138	425	3,713	560	3,153	3,483	246	3,237	162	3,075	671	60	611
1954	4,471	472	3,999	605	3,394	3,703	282	3,421	181	3,240	754	108	646
1955	4,877	529	4,348	641	3,707	3,862	289	3,573	169	3,404	818	100	718
1956	5,587	586	5,001	888	4,113	3,899	288	3,611	251	3,360	874	96	778
1957	5,850	593	5,257	970	4,287	3,956	308	3,648	273	3,375	901	111	790
1958	5,925	594	5,331	954	4,377	4,103	314	3,789	247	3,542	908	131	777
1959	6,668	676	5,992	1,015	4,977	3,939	305	3,634	267	3,367	981	- 14	995
1960	7,007	747	6,260	1,001	5,259	3,887	381	3,506	297	3,209	1,128	169	959
1961	7,526	758	6,768	1,507	5,461	4,120	388	3,732	378	3,354	1,146	142	1,004
1962	7,762	837	6,925	1,252	5,673	4,238	418	3,820	321	3,499	1,255	230	1,025
1963	8,197	851	7,346	1,400	5,946	4,454	454	4,000	354	3,646	1,305	226	1,079
1964	8,599	930	7,669	1,066	6,603	4,389	503	3,886	271	3,615	1,433	312	1,121
1965	9,175	1,009	8,166	1,362	6,804	4,645	549	4,096	320	3,776	1,558	408	1,150

The methods by which Y_h, X_h, Y_L, and X_L were estimated are described in Appendix III-2. The results for the years 1949-65 are presented in Table III-31, which shows consumption expenditures for the industrial and agricultural sectors disaggregated by expenditures for industrial and agricultural goods.

3. Summary: Income Nexus Estimates

To present a complete picture of each income sector, 1949-65, juncture balance tables showing all inflows and outflows have been prepared. Table III-32 presents the juncture balance table for industry; Table III-33, for agriculture; and Table III-34, for government.

4. The Income Nexus: Performance

It is clear from the preceding discussion that we do not have excessive confidence in the accuracy of our income nexus estimates. Nevertheless, we scrutinize these results briefly from the viewpoint of the behavior of these series over the period 1949-65.

Table III-35 presents growth rates for the income nexus flows, both as averages for the entire period, 1949-65, and by the two eight-year sub-periods (1949-57 and 1957-65). Several generalizations about the performance of the income nexus flows can be made from this table,

Table III - 31: Industrial Sector Consumption Expenditures (C_h) Disaggregated by Expenditures for Industrial Goods (Y_h) and Agricultural Goods (X_h) and Agricultural Sector Consumption Expenditures (C_L) Disaggregated by Expenditures for Industrial Goods (Y_L) and Agricultural Goods (X_L), 1949-1965 (All in Million pesos, 1955 constant prices)

	Industrial Sector			Agricultural Sector		
Year	Consumption (C_h)	Industrial Goods (Y_h)	Agricultural Goods (X_h)	Consumption (C_L)	Industrial Goods (Y_L)	Agricultural Goods (X_L)
1949	2,628	1,577	1,051	2,136	1,162	974
1950	2,799	1,679	1,120	2,322	1,384	938
1951	2,868	1,663	1,205	2,584	1,453	1,131
1952	3,077	1,754	1,323	2,742	1,487	1,255
1953	3,153	1,703	1,450	3,075	1,545	1,530
1954	3,394	1,867	1,527	3,240	1,641	1,599
1955	3,707	2,261	1,446	3,404	1,909	1,495
1956	4,113	2,427	1,686	3,360	1,836	1,524
1957	4,287	2,529	1,758	3,375	1,841	1,534
1958	4,377	2,451	1,926	3,542	1,863	1,679
1959	4,977	3,086	1,891	3,367	1,883	1,484
1960	5,259	3,366	1,893	3,209	1,985	1,224
1961	5,461	3,386	2,075	3,354	1,966	1,388
1962	5,673	3,574	2,099	3,499	2,145	1,354
1963	5,946	3,746	2,200	3,646	2,204	1,442
1964	6,603	4,424	2,179	3,615	2,351	1,264
1965	6,804	4,491	2,313	3,776	2,405	1,371

TABLE III-32

Income Nexus: Industry, All Variables, 1949-1965
(million pesos, constant 1955 prices)

	INFLOWS			OUTFLOWS				
	V_y	G_h	Total	Y_h	X_h	T_h	S_h	Total
1949	3,069	191	3,260	1,577	1,051	252	380	3,260
1950	3,454	190	3,644	1,679	1,120	288	557	3,644
1951	3,447	196	3,643	1,663	1,205	351	424	3,643
1952	3,684	236	3,920	1,754	1,323	432	411	3,920
1953	3,864	274	4,138	1,703	1,450	425	560	4,138
1954	4,178	293	4,471	1,867	1,527	472	605	4,471
1955	4,543	334	4,877	2,261	1,446	529	641	4,877
1956	5,247	340	5,587	2,427	1,686	586	888	5,587
1957	5,512	338	5,850	2,529	1,758	593	970	5,850
1958	5,589	336	5,925	2,451	1,926	594	954	5,925
1959	6,232	436	6,668	3,086	1,891	676	1,015	6,668
1960	6,563	444	7,007	3,366	1,893	747	1,001	7,007
1961	7,065	461	7,526	3,386	2,075	758	1,307	7,526
1962	7,278	484	7,762	3,574	2,099	837	1,252	7,762
1963	7,687	510	8,197	3,746	2,200	851	1,400	8,197
1964	8,064	535	8,599	4,424	2,179	930	1,066	8,599
1965	8,613	562	9,175	4,491	2,313	1,009	1,362	9,175

TABLE III-33

Income Nexus: Agriculture, All Variables, 1949-1965
(million pesos, constant 1955 prices)

Year	INFLOWS			OUTFLOWS				
	V_x	G_L	Total	Y_L	X_L	T_L	S_L	Total
1949	2,212	180	2,392	1,162	974	134	122	2,392
1950	2,441	179	2,620	1,384	938	151	147	2,620
1951	2,721	184	2,905	1,453	1,131	200	121	2,905
1952	2,900	223	3,123	1,487	1,255	249	132	3,123
1953	3,226	257	3,483	1,545	1,530	246	162	3,483
1954	3,428	275	3,703	1,641	1,599	282	181	3,703
1955	3,548	314	3,862	1,909	1,495	289	169	3,862
1956	3,578	321	3,899	1,836	1,524	288	251	3,899
1957	3,638	318	3,956	1,841	1,534	308	273	3,956
1958	3,786	317	4,103	1,863	1,679	314	247	4,103
1959	3,528	411	3,939	1,883	1,484	305	267	3,939
1960	3,469	418	3,887	1,985	1,224	381	297	3,887
1961	3,685	435	4,120	1,966	1,388	388	378	4,120
1962	3,782	456	4,238	2,145	1,354	418	321	4,238
1963	3,974	480	4,454	2,204	1,442	454	354	4,454
1964	3,885	504	4,389	2,351	1,264	503	271	4,389
1965	4,116	529	4,645	2,405	1,371	549	320	4,645

TABLE III-34

Income Nexus: Government, All Variables, 1949-1965
(million pesos, constant 1955 prices)

Year	INFLOWS			CUTFLOWS		
	T_h	T_L	Total	G	S_g	Total
1949	252	134	386	437	- 51	386
1950	288	151	439	454	- 15	439
1951	351	200	551	471	80	551
1952	432	249	681	562	119	681
1953	425	246	671	611	60	671
1954	472	282	754	646	108	754
1955	529	289	818	718	100	818
1956	586	288	874	778	96	874
1957	593	308	901	790	111	901
1958	594	314	908	777	131	908
1959	676	305	981	995	- 14	981
1960	747	381	1,128	959	169	1,128
1961	758	388	1,146	1,004	142	1,146
1962	837	418	1,255	1,025	230	1,255
1963	851	454	1,305	1,079	226	1,305
1964	930	503	1,433	1,121	312	1,433
1965	1,009	549	1,558	1,150	408	1,558

TABLE III-35

Growth Rates: Income Nexus Flows, 1949-1965, 1949-1957, and 1957-1965

	1949-65	1949-57	1957-65
Personal Income, Industry (P_h)	.067	.076	.058
Personal Income, Agriculture (P_L)	.042	.065	.020
Disposable Income, Industry (D_h)	.064	.072	.057
Disposable Income, Agriculture (D_L)	.038	.062	.015
Consumption, Industry (C_h)	.061	.063	.052
Industrial Goods (Y_h)	.068	.061	.074
Agricultural Goods (X_h)	.051	.066	.035
Consumption, Agriculture (C_L)	.036	.059	.014
Industrial Goods (Y_L)	.047	.059	.034
Agricultural Goods (X_L)	.022	.058	-.012
Savings, Industry (S_h)	.083	.124	.043
Savings, Agriculture (S_L)	.062	.106	.020
Taxes, Industry (T_h)	.091	.113	.069
Taxes, Agriculture (T_L)	.092	.110	.075

subject, of course, to the data qualifications stressed in the discussion of estimation procedures.

First, as we would expect from our earlier review of the growth of output (value added), industrial sector income grew more rapidly than agricultural sector income. For the period as a whole, personal income earned by the industrial sector grew at an average annual rate of 6.7 per cent, compared to 4.2 per cent for agriculture. Disposable (personal income less taxes) income showed about the same difference in growth rates by the two sectors.

Second, in general, the average annual growth rate of consumption expenditures by the two sectors showed a similar disparity over the period (6.1 per cent for industry compared to 3.6 per cent for agriculture). Industrial sector expenditures on industrial goods grew by an average annual rate of 6.8 per cent compared to 5.1 per cent for industrial sector expenditures on agricultural goods. It is somewhat surprising to find that the discrepancy between rates of growth of agricultural's spending on industrial and agricultural goods is larger than that for the industrial sector. Agricultural sector spending on industrial goods grew at an average annual rate of 4.7 per cent, compared to only 2.2 per cent for its spending on agricultural goods. It may be that the subsistence component of agricultural

sector consumption, neglected in national income estimates, accounts for this paradoxical result in the Engel's Law effect between the two sectors.

Third, over the entire period, savings of both sectors grew at very respectable rates; 8.3 per cent per year for industry and 6.2 per cent for agriculture. The rate of growth of tax payments was approximately the same for the two sectors (slightly over 9 per cent).

A fourth generalization is the most striking and perhaps most significant; virtually all flows show a very significant difference in performance between the two subperiods, 1949-57 and 1957-65. Income, consumption, savings, and tax flows grew more rapidly in the first half of our 16-year period than in the second. Moreover, this applies to both sectors although the differences are greater for agriculture than for industry. Agricultural (personal) income's growth rate fell from 6.5 to 2.0 per cent; industry's, from 7.6 to 5.8 per cent. Agricultural consumption's rate of growth fell from 5.9 to 1.4 per cent; agricultural savings, from 10.6 to 2.0 per cent. Industrial consumption's growth rate fell from 6.3 to 5.2 per cent; industrial savings, from 12.4 to 4.3 per cent.

To assist in visualizing the differences in performance of important income flows between the two sectors, Diagram III-7 shows the

behavior of each sector's disposable income, consumption, and savings, 1949-65. The top part of the diagram shows these variables for the industrial sector [Disposable income (D_h); Consumption (C_h); and Savings (S_h)]. The bottom part shows disposable income (D_L), consumption (C_L), and savings (S_L) for the agricultural sector. The variations in rates of growth between the two sectors, discussed above, stand out very sharply. The three income flows shown continue to expand throughout the period in the case of industry, while a distinct retardation can be seen for agriculture.

Table III-36 shows our estimates of the share of each sector's personal income paid out as taxes. In general, the ratio of taxes to personal income rose steadily for each sector, somewhat more rapidly for agriculture than for industry. The ratio of taxes paid by the agricultural sector to personal income (T_L/P_L) rose from 5.6 per cent in 1949 to 11.8 per cent in 1965. The ratio for industry (T_h/P_h) rose from 7.7 per cent in 1949 to 12.0 per cent in 1965.

DIAGRAM III-7: Disposable Income, Consumption and Savings--
Agriculture and Industry

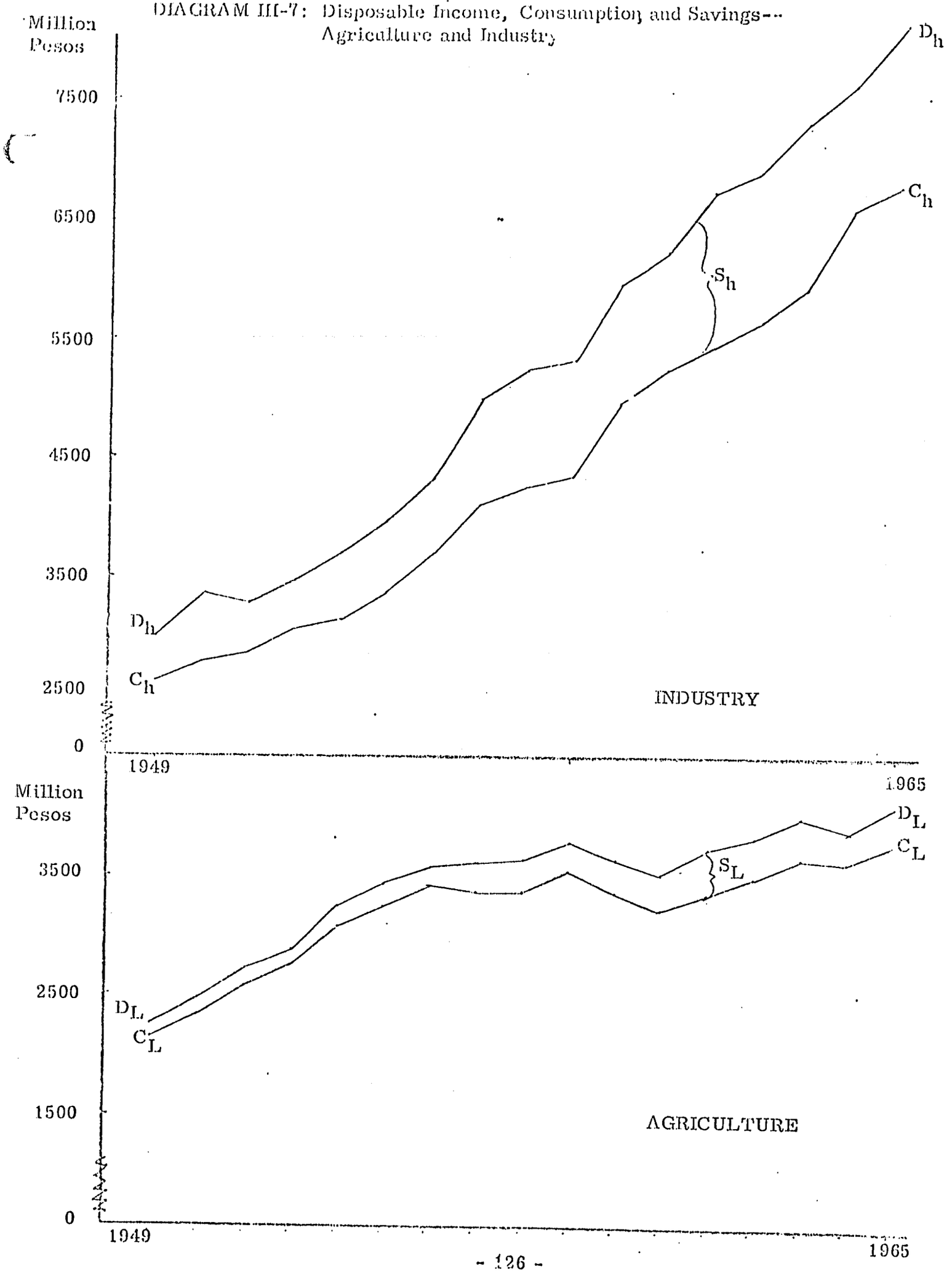


TABLE III-36

Taxes and Personal Income: Industry and Agriculture, 1949-1965
(million pesos, constant 1955 prices)

	INDUSTRY			AGRICULTURE		
	T_h	P_h	T_h/P_h	T_L	P_L	T_L/P_L
1949	252	3,260	.077	134	2,392	.056
1950	288	3,644	.079	151	2,620	.058
1951	351	3,643	.096	200	2,905	.069
1952	432	3,920	.110	249	3,123	.080
1953	425	4,138	.103	246	3,483	.071
1954	472	4,471	.107	282	3,703	.076
1955	529	4,877	.109	289	3,862	.075
1956	586	5,587	.105	288	3,899	.074
1957	593	5,850	.101	308	3,956	.078
1958	594	5,925	.100	314	4,103	.077
1959	676	6,668	.101	305	3,939	.077
1960	747	7,007	.108	381	3,887	.098
1961	758	7,526	.101	388	4,120	.094
1962	837	7,762	.108	418	4,238	.099
1963	851	8,197	.104	454	4,454	.102
1964	930	8,599	.108	503	4,389	.113
1965	1,009	9,175	.120	549	4,645	.118

D. THE FINANCIAL NEXUS

The financial nexus is shown in Diagram III-8. This nexus distinguishes one outflow, the economy's gross investment (I) as financed by the four inflows: three domestic savings components (industrial sector savings, S_h; agricultural sector savings, S_L; and government savings, S_g) and foreign savings, A. Thus:

$$I = S_h + S_L + S_g + A$$

1. Financial Nexus Estimates

Only the inflows (domestic and foreign savings) are estimated. There are no available independent estimates of investment with proper annual indicators. We have, therefore, assumed the value of investment to be equal to total savings inflows.

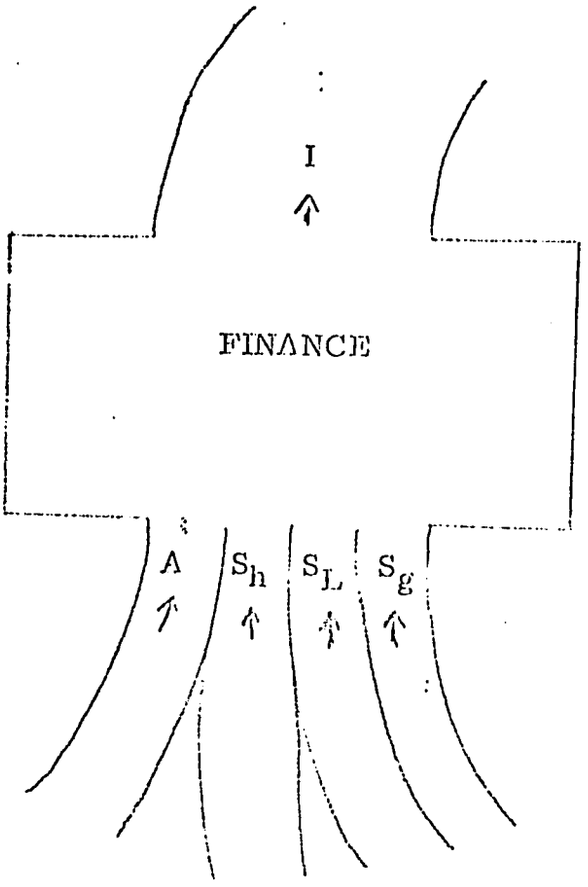
Values of foreign savings, A, for the period 1949-65 are taken from our foreign sector estimates presented in Section III-A. Government savings, S_g, are derived from the estimates of government expenditures and tax income, discussed earlier.[35] Estimates of private sector savings

---

[35]Perusal of government account reports suggested that reported expenditure and tax income are relatively reliable and that re-estimation would not produce significant changes or improvement.

DIAGRAM III-8

FINANCIAL NEXUS



($S_h + S_L$ in our system), however, were based upon work done by Richard W. Hooley[36] in the absence of any direct or satisfactory estimates in the official accounts.[37] Hooley's estimates, in current prices, covered the years 1951-60. Using Hooley's methodology, we extended his estimates back to 1949 and forward to 1965 to provide a series for the entire period, 1949-65. Estimates for all years were converted to 1955 constant prices. Details concerning these estimates are presented in Appendix IV.

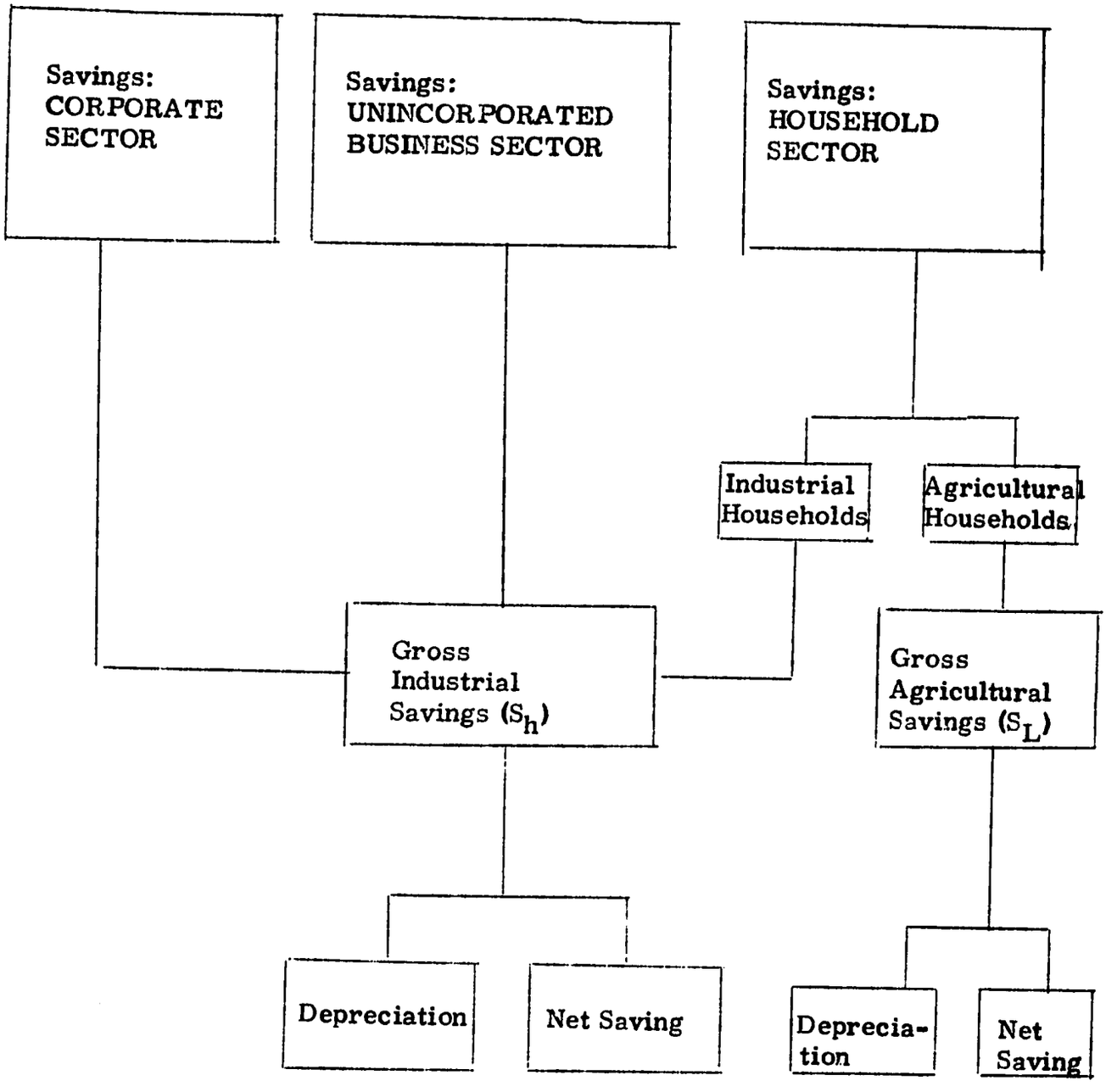
Diagram III-9 shows the conceptual framework used to disaggregate private savings between industrial savings, S_h, and agricultural savings, S_L. It will be noted that all corporate sector and unincorporated business sector savings are construed to be industrial savings. Household savings are split between the two sectors, industrial and agricultural. This implies that household savings are construed to be the only source of agricultural savings while there are three components in industrial savings--corporate, unincorporated business, and household.

---

[36] Richard W. Hooley, Saving in the Philippines, 1951-1960 (Quezon City: University of the Philippines, Institute of Economic Development and Research, 1963).

[37] After our estimates were completed, the new NEC national income series, 1962-64, appeared. Although this series provides improved savings estimates, we have used them only for comparison with our own estimates.

DIAGRAM III-9: GROSS PRIVATE SAVING



These procedures, whose application is described in detail in Appendix IV, were used to derive our estimates of gross private savings. Hooley's estimates of depreciation were employed for the years covered in his study (1951-60) and extrapolated backward to 1949 and forward to 1965 to complete our time series. For estimation of industrial and agricultural depreciation as a component of gross value added (V_y and V_x, respectively) in the previous section, total depreciation was allocated between these sectors on the basis of annual ratios presented in the NEC accounts.[38]

The aggregate results for savings and investment, as a juncture balance table for the financial nexus, 1949-65, are presented in Table III-37. In addition to showing total inflows (finance of investment) by the four sources (industrial, agricultural, government, and foreign savings), Table III-37 shows total investment (I) and its allocation between agriculture (I_x) and industry (I_y). Annual ratios for deriving this latter breakdown were taken from estimates in the official NEC accounts.

---

[38]These series are found in Appendix IV, Tables A-IV-8 and A-IV-9.

TABLE III-37

Financial Nexus: All Variables
(million pesos, constant 1955 prices)

Year	INFLOWS					OUTFLOWS		
	S_h	S_L	S_g	A	Total	I_x	I_y	Total (I)
1949	380	122	-51	663	1,114	301	813	1,114
1950	557	147	-15	-62	627	201	426	627
1951	424	121	80	107	732	190	542	732
1952	411	132	119	-11	651	176	475	651
1953	560	162	60	14	796	231	565	796
1954	605	181	108	126	1,020	326	694	1,020
1955	641	169	100	306	1,216	317	899	1,216
1956	888	251	96	139	1,374	385	989	1,374
1957	970	273	111	533	1,887	321	1,566	1,887
1958	954	247	131	274	1,606	337	1,269	1,606
1959	1,015	267	-14	159	1,427	243	1,184	1,427
1960	1,001	297	169	237	1,704	324	1,380	1,704
1961	1,307	378	142	292	2,119	381	1,738	2,119
1962	1,252	321	230	137	1,940	369	1,571	1,940
1963	1,400	354	226	98	2,078	457	1,621	2,078
1964	1,066	271	312	237	1,886	264	1,622	1,886
1965	1,362	320	408	144	2,234	357	1,877	2,234

2. Financial Nexus: Performance

Given the empirical basis for our estimates of domestic savings and our revision of foreign capital inflows, we regard the estimated values of investment finance and its pattern of annual changes as fairly good approximations. Table III-38 compares our estimates of the annual volume of investment and its ratio to GNP with the official NEC estimates. Our estimates yield a consistently higher investment ratio than the NEC estimates. We note that for the four years covered by the NEC "new series," 1962-65, NEC revisions in estimation methods have produced substantially higher estimated investment ratios.[39]

In interpreting these results for a general assessment of the performance of the financial nexus, a number of interesting issues arise. Assuming the level of investment to be approximately that shown by the NPA estimates in Table III-38, the issues concern the pattern of investment financing by the sources identified by our framework and the changes in this pattern over the 1949-65 time period. Relevant data are presented in Table III-39.

---

[39]See Appendix V for this comparison.

TABLE III-38

Investment Ratios: NPA and NEC Estimates Compared
(million pesos, constant 1955 prices)

Year	NPA Estimate			NEC Estimate		
	GNP	I	I/GNP	GNP	I	I/GNP
1949	5,652	1,114	.197	5,718	711	.124
1950	6,264	627	.100	6,228	591	.095
1951	6,584	732	.111	6,523	455	.070
1952	7,043	651	.092	7,093	434	.061
1953	7,621	796	.104	7,646	562	.074
1954	8,174	1,020	.125	8,058	683	.085
1955	8,739	1,216	.139	8,687	789	.091
1956	9,486	1,374	.145	9,379	818	.087
1957	9,806	1,887	.192	9,707	1,001	.103
1958	10,028	1,606	.160	9,888	935	.095
1959	10,607	1,427	.135	10,514	838	.080
1960	10,894	1,704	.156	10,804	1,031	.095
1961	11,646	2,119	.182	11,431	1,234	.108
1962	12,000	1,940	.162	11,832	1,062	.090
1963	12,651	2,078	.164	12,457	1,239	.100
1964	12,988	1,886	.145	12,967	1,559	.120
1965	13,820	2,234	.162	13,670	1,477	.108

TABLE III-39

Total Financing of Investment (I)
(million pesos, constant 1955 prices)

Year	DOMESTIC SAVING (S)								Foreign Savings		I
	S_h	% of I	S_L	% of I	S_g	% of I	S	% of I	A	% of I	(=S+A)
1949	380	34.1	122	11.0	-51	-4.6	451	40.5	663	59.5	1,114
1950	557	88.8	147	23.5	-15	-2.4	689	109.9	-62	-9.9	627
1951	424	57.9	121	16.5	80	10.9	625	85.4	107	14.6	732
1952	411	63.1	132	20.3	119	18.3	662	101.7	-11	-1.7	651
1953	560	70.3	162	20.4	60	7.5	782	98.2	14	1.8	796
1954	605	59.3	181	17.7	108	10.6	894	87.6	126	12.4	1,020
1955	641	52.7	169	13.9	100	8.2	910	74.8	306	25.2	1,216
1956	888	64.6	251	18.3	96	7.0	1,235	89.9	139	10.1	1,374
1957	970	51.4	273	14.4	111	5.9	1,354	71.7	533	28.2	1,887
1958	954	59.4	247	15.4	131	8.1	1,332	82.9	274	17.1	1,606
1959	1,015	71.1	267	18.7	-14	-0.9	1,268	88.9	159	11.1	1,427
1960	1,001	58.8	297	17.4	169	9.9	1,467	86.1	237	13.9	1,704
1961	1,307	61.7	378	17.8	142	6.7	1,827	86.2	292	13.8	2,119
1962	1,252	64.5	321	16.5	230	11.9	1,803	92.9	137	7.1	1,940
1963	1,400	67.4	354	17.0	226	10.9	1,980	95.3	98	4.7	2,078
1964	1,066	56.5	271	14.4	312	16.5	1,649	87.4	237	12.6	1,886
1965	1,362	61.0	320	14.3	408	18.3	2,090	93.6	144	6.4	2,234
Percentage of I											
Average 1949-65		61.3		16.9		8.4		86.7		13.3	
Average 1950-65		63.0		17.3		9.2		89.5		10.5	
Average 1951-65		61.3		16.9		10.0		88.2		11.8	

A first issue concerns the relative contributions of domestic savings (S) and foreign savings (A) to investment finance. After the major capital inflows associated with rehabilitation and stabilization (in 1949 foreign capital contributed 59 per cent of investment finance) subsided, foreign savings made more modest contributions. In 1950 and 1952 they were slightly negative. In 1955 and 1957 foreign savings rose to over one-fourth of investment finance but then settled back to smaller contributions throughout the period through 1965. Over the entire period, 1949-65, foreign savings financed an average of 13 per cent of the economy's annual investment. The annual changes in the ratio of foreign savings to gross domestic investment can be seen in Table III-39.

Among the domestic savings components of investment finance ($S = S_h + S_L + S_g$), there were some significant changes in composition. In the early years of the period studied, government savings were slightly negative. After becoming positive in 1951, they contributed between 7 and 18 per cent of investment finance during the remainder of the period--except for 1959 when they were slightly negative. Although annual variations in government savings as a share of investment finance were erratic, they contributed an average of 8.4 per cent for the entire period and an average of 10 per cent after they turned positive in 1951.

Both industrial sector and agricultural sector savings rose steadily over the period in absolute amounts. Except for the year 1949 when the pattern was distorted by foreign savings accounting for 60 per cent of investment finance, an average of 63 per cent of the economy's investment was financed by industrial sector savings and 17 per cent by agricultural sector savings. There were no pronounced changes in these general contributions although the agricultural contribution, as a share of the total, showed a slightly declining tendency after 1954.

The ratio of domestic savings to gross national product ("average savings rate") and its behavior over time are often taken to be measures of domestic "self-help" in the context of development. Table III-40 compares our NPA estimates of this ratio with the "official" NEC estimate (old series). Both series show significant progress in raising the average savings rate over the 1949-65 period, although it is generally recognized that NEC estimates of the level of savings are too low.[40] Our estimates show domestic savings representing about 9.5 per cent of GNP at the beginning of the period (1949-51 average) and rising to about 14.5 per cent in the last three years of the period. It appears clear, therefore, that over

---

[40] The revisions in NEC savings estimates in the new series, 1962-65, result in substantially higher estimates of the domestic savings ratio--in fact, above our own estimates. See Appendix V for details.

TABLE III-40

Domestic Savings Ratios: NPA and NEC Estimates Compared
(million pesos, constant 1955 prices)

Year	NPA Estimate			NEC Estimate		
	GNP	S	S/GNP	GNP	S	S/GNP
1949	5,652	451	.080	5,718	31	.054
1950	6,264	689	.110	6,228	637	.102
1951	6,584	625	.095	6,523	375	.057
1952	7,043	662	.094	7,093	336	.047
1953	7,621	782	.103	7,646	466	.061
1954	8,174	894	.109	8,058	528	.066
1955	8,739	910	.104	8,687	468	.054
1956	9,486	1,235	.130	9,379	688	.073
1957	9,806	1,354	.138	9,707	626	.064
1958	10,028	1,332	.133	9,888	765	.077
1959	10,607	1,268	.120	10,514	741	.070
1960	10,894	1,467	.135	10,804	753	.070
1961	11,646	1,827	.157	11,431	1,065	.093
1962	12,000	1,803	.150	11,832	963	.081
1963	12,651	1,980	.157	12,457	1,719	.138
1964	12,988	1,649	.127	12,967	1,764	.136
1965	13,820	2,090	.151	13,670	1,833	.134

this period the economy's marginal savings ratio was well above the average savings rate. Over the period as a whole, the marginal savings rate is estimated to have been 20 per cent.

Progress toward raising the domestic savings rate was a matter of improving performance by all three domestic components, industrial savings (S_h), agricultural savings (S_L), and government savings (S_g). Over the entire period, 1949-65, domestic savings grew at an average annual rate of 10 per cent while investment grew by 4.4 per cent. The difference between the two reflects the declining share of investment financed by foreign savings. Components of domestic savings showed some variation in performance. Government savings grew at an average annual rate of 8.5 per cent, industrial savings at 8.3 per cent, and agricultural savings at 6.2 per cent.[41]

In Table III-41 industrial sector savings (S_h) and agricultural sector savings (S_L) are presented as shares of total savings of the private sector of the economy ($S_h + S_L$). Over the 1949-65 period, industrial savings averaged 78 per cent of private savings while agricultural savings

---

[41] Growth rates were calculated by using a three-year average initial year base for government savings because of negative values for 1949 and 1950. Growth rates for industrial and agricultural sector savings were based on terminal years.

averaged 22 per cent. There was a slight tendency for the industrial share to rise and the agricultural share to fall.

Table III-42 shows sectoral savings as a share of sector personal income (S_h/P_h for industry and S_L/P_L for agriculture). Savings consistently represented a substantially larger fraction of industrial sector income than of agricultural sector income. Over the entire period industrial sector savings averaged 14.4 per cent of personal income compared to 6.2 per cent for the agricultural sector. Both sectors raised their savings-income ratios over the period 1949-65; the industrial sector from 12.9 per cent in 1949-51 to 14.8 per cent in 1963-65 and the agricultural sector from 5.0 per cent in 1949-51 to 7.0 per cent in 1963-65. In the industrial sector, savings grew at an average annual rate of 8.3 per cent while personal income grew at an average annual rate of 6.7 per cent. In the agricultural sector, savings grew at an average rate of 6.2 per cent, compared to 4.2 per cent for personal income. Viewed in terms of sector marginal savings ratios over the 1949-65 period, the industrial sector showed a marginal savings ratio of 16.6 per cent, compared to 8.8 per cent for the agricultural sector. It was this force which pulled up the average savings-income ratio over the period in both sectors.

TABLE III-41

Industry and Agriculture:
Ratio of Sectoral Savings to Gross Private Saving
(million pesos, 1955 constant prices)

Year	S_h	S_L	$S_h + S_L$ (Gross Private Saving)	$\frac{S_h}{S_h + S_L}$ %	$\frac{S_L}{S_h + S_L}$ %
	(1)	(2)	(3)	(4)	(5)
1949	380	122	502	76	24
1950	557	147	704	79	21
1951	424	121	545	78	22
1952	411	132	543	76	24
1953	560	162	722	78	22
1954	605	181	786	77	23
1955	641	169	810	79	21
1956	888	251	1,139	78	22
1957	970	273	1,243	78	22
1958	954	247	1,20[illegible]	79	21
1959	1,015	267	1,282	79	21
1960	1,001	297	1,298	77	23
1961	1,307	378	1,685	78	22
1962	1,252	321	1,573	80	20
1963	1,400	354	1,754	80	20
1964	1,066	271	1,337	80	20
1965	1,362	320	1,682	81	19
Average				78.4	21.6

TABLE III-42

Savings and Personal Income:
Industry and Agriculture, 1949-1965
(million pesos, 1955 constant prices)

	INDUSTRY			AGRICULTURE		
	S_h	P_h	S_h/P_h	S_L	P_L	S_L/P_L
1949	380	3260	.117	122	2392	.051
1950	557	3644	.153	147	2620	.056
1951	424	3643	.116	121	2905	.042
1952	411	3920	.105	132	3123	.042
1953	560	4138	.135	162	3483	.047
1954	605	4471	.135	181	3703	.049
1955	641	4877	.131	169	3862	.044
1956	888	5587	.159	251	3899	.064
1957	970	5860	.166	273	3956	.069
1958	954	5925	.161	247	4103	.060
1959	1015	6668	.152	267	3939	.068
1960	1001	7007	.143	297	3887	.076
1961	1307	7526	.174	378	4120	.092
1962	1252	7762	.161	321	4238	.076
1963	1400	8197	.171	354	4454	.080
1964	1066	8599	.124	271	4389	.062
1965	1362	9175	.148	320	4645	.069
Average			.144			.062

E. TOTAL AVAILABILITY: INDUSTRIAL AND AGRICULTURAL GOODS

1. Estimates

Junctures Y_a and X_a in Diagram I-1 show, respectively, total available supply of finished goods for industry and agriculture. As such, they represent domestic output of finished goods plus imported finished goods and the disposition of this total available supply. Estimates of the values of Y_a and X_a are derived as residuals from the other flows discussed in the preceding sections.

Juncture balances showing the results of our estimates for the 1949-65 period are presented in Tables III-43 (industry) and III-44 (agriculture). In Table III-43, domestic supply of industrial finished goods is shown as the outflow Y_d (expenditures for domestic supply) while imported supply of industrial finished goods is shown as the outflow M_f (expenditures for imported supply). Domestic disposition of this total available supply ($Y_a = Y_d + M_f$) includes domestic investment (I), purchases by industrial households (Y_h) and purchases by agricultural households (Y_L).

In Table III-44, domestic supply of final agricultural goods is shown as the outflow X_d (expenditures for domestic supply) while imported supply of final agricultural goods is shown as the outflow M_x (expenditures

TABLE III-43

Total Availability: Industry, 1949-1965
(million pesos, constant 1955 prices)

Year	INFLOWS				OUTFLOWS		
	Y_h	Y_L	I	Total (Y_a)	Y_d	M_f	Total (Y_a)
1949	1,577	1,162	1,114	3,853	2,942	911	3,853
1950	1,679	1,384	627	3,690	3,127	563	3,690
1951	1,663	1,453	732	3,848	3,090	758	3,848
1952	1,754	1,487	651	3,892	3,158	734	3,892
1953	1,703	1,545	796	4,044	3,296	748	4,044
1954	1,867	1,641	1,020	4,528	3,659	869	4,528
1955	2,261	1,909	1,216	5,386	4,401	985	5,386
1956	2,427	1,836	1,374	5,637	4,638	999	5,637
1957	2,529	1,841	1,887	6,257	5,124	1,133	6,257
1958	2,451	1,863	1,606	5,920	4,965	955	5,920
1959	3,086	1,883	1,427	6,396	5,515	881	6,396
1960	3,366	1,985	1,704	7,055	5,999	1,056	7,055
1961	3,386	1,966	2,119	7,471	6,488	983	7,471
1962	3,574	2,145	1,940	7,659	6,794	865	7,659
1963	3,746	2,204	2,078	8,028	7,045	983	8,028
1964	4,424	2,351	1,886	8,661	7,540	1,121	8,661
1965	4,491	2,405	2,234	9,130	7,942	1,188	9,130

TABLE III-44

Total Availability: Agriculture, 1949-1965
(million pesos, constant 1955 prices)

Year	INFLOWS			OUTFLOWS		
	X_L	Y_h	Total (X_a)	X_d	M_x	Total (X_a)
1949	974	1,051	2,025	1,804	221	2,025
1950	938	1,120	2,058	1,966	92	2,058
1951	1,131	1,205	2,336	2,206	130	2,336
1952	1,255	1,323	2,578	2,485	93	2,578
1953	1,530	1,450	2,980	2,873	107	2,980
1954	1,599	1,527	3,126	3,006	120	3,126
1955	1,495	1,446	2,941	2,795	146	2,941
1956	1,524	1,686	3,210	3,056	154	3,210
1957	1,534	1,758	3,292	3,122	170	3,292
1958	1,679	1,926	3,605	3,454	151	3,605
1959	1,484	1,891	3,375	3,273	102	3,375
1960	1,224	1,893	3,117	3,002	115	3,117
1961	1,388	2,075	3,463	3,232	231	3,463
1962	1,354	2,099	3,453	3,323	130	3,453
1963	1,442	2,200	3,642	3,388	254	3,642
1964	1,264	2,179	3,443	3,158	285	3,443
1965	1,371	2,313	3,684	3,297	387	3,684

for imported supply). Disposition of total available agricultural supply ($X_a = X_d + M_x$) is disposed of as sales to the two consuming sectors, X_L, representing consumption by agricultural households and X_h, consumption by industrial households.

2. Import Substitution at the Aggregate Level

A comparison of the domestic and total supply variables in the total availability junctures gives us a convenient aggregate measure of import substitution for the two sectors, agriculture and industry. Table III-45 presents computations of this kind for the two sectors, as well as for the private sector as a whole.

It is apparent from Table III-45 that the industrial sector made considerable progress in increasing the domestic supply component (Y_d) of total industrial availability (Y_a). Domestic output of final industrial goods rose from 76 per cent of total availability in 1949 to 87 per cent in 1965. Progress toward import substitution of final industrial goods was fairly steady during the period.

The agricultural sector presents a rather different picture. Cver the period as a whole, domestic supply (X_d) appeared to remain almost a constant fraction of total availability (X_a) if only the initial year 1949 and the terminal year 1965 are considered. In both years the fraction was

TABLE III-45

Import Substitution at Aggregate Level
(million pesos, constant 1955 prices)

	AGRICULTURE			INDUSTRY			PRIVATE SECTOR		
	X_d	X_a	X_d/X_a	Y_d	Y_a	Y_d/Y_a	X_d+Y_d	X_a+Y_a	$\frac{X_d+Y_d}{X_a+Y_a}$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1949	1804	2025	.891	2942	3853	.764	4746	5878	.807
1950	1963	2058	.955	3127	3690	.847	5093	5748	.886
1951	2206	2336	.945	3090	3848	.803	5296	6184	.856
1952	2485	2578	.964	3158	3892	.811	5643	6470	.872
1953	2873	2980	.964	3296	4044	.815	6169	7024	.878
1954	3006	3126	.962	3659	4528	.808	6665	7654	.871
1955	2795	2941	.950	4401	5386	.817	7196	8327	.864
1956	3056	3210	.952	4638	5637	.823	7694	8847	.870
1957	3122	3292	.948	5124	6257	.819	8246	9549	.872
1958	3454	3605	.958	4965	5920	.839	8419	9525	.884
1959	3273	3375	.970	5515	6396	.862	8788	9771	.899
1960	3002	3117	.963	5999	7055	.850	9001	10172	.885
1961	3232	3463	.933	6488	7471	.868	9720	10934	.889
1962	3323	3453	.962	6794	7659	.887	10117	11112	.910
1963	3388	3642	.930	7045	8028	.878	10433	11670	.894
1964	3158	3443	.917	7540	8661	.871	10698	12104	.884
1965	3297	3684	.895	7942	9130	.870	11239	12814	.877

about 89 per cent. On the basis of three-year initial and terminal year averages, we find the fraction of domestic agricultural supply falling from 93 per cent of total availability in 1949-51 to 91 per cent in 1963-65. However, further scrutiny of the X_d/X_a series reveals that until about 1960 a tendency toward a rising X_d/X_a fraction existed. Beginning in 1961, however, the fraction fell somewhat erratically to the value of .895 found for 1965. We interpret this to reflect progress toward import substitution of total agricultural availability during much of the period, followed by a sharp reversal after 1960. This is, of course, substantiated by the rising share of agricultural imports in total imports, noted in our discussion of the disaggregated import series (Section III-A-3).

The combined forces of industrial and agricultural import substitution, just discussed, produced the overall result shown for the private sector in the last column of Table III-45. Over the 1949-65 period domestically produced private sector supply $(X_d + Y_d)$ rose slightly as a share of total private sector availability $(X_a + Y_a)$ from .85 in 1949-51 to .885 in 1963-65.

APPENDICES

APPENDIX I: FOREIGN NEXUS: SUPPLEMENTARY DATA

TABLE A-I-1

Dollar Price Indices, Imports, Exports, and Average, 1949-1965
(1955 = 100)

Year	Import	Export	Average*
1949	103.3	129.0	116.2
1950	98.6	119.7	109.2
1951	111.2	127.7	119.6
1952	109.5	100.6	105.1
1953	104.5	122.8	113.7
1954	100.0	109.0	104.5
1955	100.0	100.0	100.0
1956	101.4	101.4	101.4
1957	104.6	102.8	103.7
1958	107.0	106.9	107.0
1959	109.2	115.9	112.6
1960	111.5	114.1	112.8
1961	113.2	105.0	109.1
1962	115.4	106.2	110.8
1963	123.0	111.8	117.4
1964	124.1	110.9	117.5
1965	126.2	112.8	119.5

Source of import and export price indices: Central Bank of the Philippines, Statistical Bulletin, Vol. XVII, No. 4 (December 1965), Table 71, p. 170.

*Average calculated with import and export indices given equal weight.

TABLE A-I-2

NPA and NEC Constant (1955) Price Estimates of Exports and Imports, 1958-1965 (in million pesos)

Year	Exports		Imports	
	NPA Estimate	NEC Estimate	NPA Estimate	NEC Estimate
1958	1,755	1,055	2,029	1,225
1959	1,802	985	1,961	1,082
1960	1,978	1,894	2,215	2,172
1961	2,049	1,952	2,341	2,121
1962	2,098	1,970	2,235	2,069
1963	2,250	2,450	2,348	1,970
1964	2,429	2,596	2,666	2,391
1965	2,724	2,825	2,868	2,469

TABLE A-I-3

Ratios Used to Disaggregate Commodity and Service Exports, 1949-1964

Year	Commodity Exports Percentage of Total		Service Exports, Percentage of Total	
	Agriculture	Non-Agriculture	Agriculture	Non-Agriculture
1949	89.3	10.7	38.4	61.6
1950	90.9	9.1	34.5	65.5
1951	88.9	11.1	37.0	63.0
1952	84.5	15.5	38.3	61.7
1953	87.5	14.3	40.5	59.5
1954	86.3	13.7	41.3	58.7
1955	82.5	17.5	40.2	59.8
1956	82.1	17.9	36.3	63.7
1957	83.0	17.0	35.5	64.5
1958	85.3	14.7	35.0	65.0
1959	77.6	22.4	31.7	68.3
1960	80.2	19.8	29.0	71.0
1961	77.5	22.5	28.1	71.9
1962	79.5	20.5	27.2	72.8
1963	81.3	18.7	25.0	75.0
1964	78.9	21.1	23.8	76.2
1965	79.9	20.1	24.8	75.2

TABLE A-I-4

Import Disaggregation Ratios: Merchandise Imports*
(Percent of total by category)

Year	M_x	M_y	M_i	(M_f) $(M_y + M_i)$	M_R
1949[a]	13.7	44.1	9.1	(53.2)	33.1
1950[a]	9.4	44.6	9.0	(53.6)	37.0
1951[b]	9.6	44.9	8.4	(53.3)	37.1
1952[c]	7.3	42.7	11.3	(54.0)	38.7
1953[d]	8.0	38.7	14.3	(53.0)	39.0
1954[a]	7.9	39.8	14.0	(53.8)	38.3
1955[e]	8.2	36.5	15.5	(52.0)	39.8
1956[a]	8.7	32.6	20.2	(52.8)	38.5
1957[f]	8.0	30.9	18.8	(49.7)	42.2
1958[f]	8.6	32.9	19.0	(51.9)	39.4
1959[a]	6.2	28.8	21.6	(50.4)	43.4
1960[a]	6.4	27.0	26.6	(53.6)	40.0
1961[a]	11.4	19.9	24.8	(44.7)	43.9
1962[a]	7.2	18.1	21.2	(39.3)	53.5
1963[a]	12.6	19.1	24.2	(43.3)	44.1
1964[a]	12.1	19.1	24.9	(44.0)	43.9
1965[a]	15.7	18.1	25.3	(43.4)	40.9

*Sources of basic data: 1949-58, Central Bank, Statistical Bulletin; 1959-65, Bureau of Census and Statistics, Foreign Trade Statistics of the Philippines. Rice imports are added where not reported in Census data.

[a]Estimated from original data.

[b]Disaggregated by employing our 1950 ratios to old Central Bank categories (as published in Central Bank, Statistical Bulletin, 1952).

[c]Disaggregated by employing average of our 1950 and 1954 ratios to Central Bank categories.

[d]Disaggregated by applying 1954 ratios to Central Bank categories.

[e]Interpolation among Central Bank categories between our results for 1954 and 1956.

[f]Interpolation among Central Bank categories between our results for 1956 and 1959.

TABLE A-I-5

Import Disaggregation Ratios: Service Imports

Year	PERCENT OF TOTAL			
	M_x	M_y	M_i	M_R
1949	5.5	32.0	3.7	58.8
1950	2.7	24.6	2.5	70.2
1951	3.5	28.3	3.0	65.2
1952	2.9	29.1	4.4	63.6
1953	2.4	22.4	4.1	71.1
1954	2.4	23.1	4.4	70.1
1955	2.6	23.2	4.8	69.4
1956	2.5	21.8	5.9	69.8
1957	2.6	23.2	6.1	68.1
1958	3.2	22.2	7.0	67.6
1959	1.7	19.9	5.8	72.6
1960	.9	19.3	7.3	72.5
1961	3.7	22.7	8.2	65.4
1962	1.9	31.2	5.7	61.2
1963	3.3	29.4	6.3	61.0
1964	3.3	24.6	8.[illegible]	63.4
1965	4.2	26.5	6.8	62.5

Source of Basic Data: Central Bank, Annual Reports.

Notes to Table A-I-5

Ratios to disaggregate service imports were obtained by studying the Central Bank's service import categories: foreign travel, transportation, insurance, investment income, government (not elsewhere specified), and miscellaneous. These Central Bank categories were allocated to our import components, M_x, M_y, M_i, and M_R, on the basis of fixed ratios applied to all years in the series, 1949-65. Arbitrary decisions were made after consultations with Central Bank officials concerning the nature of the service items in their listing. The allocation decisions made for each service item are presented here.

For the service item "foreign travel," which includes tourism, business and educational travel, 50 per cent was construed as an industrial consumer good import (M_y) on the basis of private consumer spending for services provided by a foreign service sector (a part of the broad industrial or nonagricultural sector in the NPA framework). The remaining 50 per cent was construed to represent business expenditures abroad and, hence, classified as intermediate service imports, M_R.

The service import item "transportation" includes primarily freight on imports and, hence, 80 per cent of this item was allocated on the basis of the import disaggregation ratios found, by year, for

merchandise imports.[1] The remaining 20 per cent of this service item was allocated 25 per cent to industrial consumer service imports, M_y, and 75 per cent to intermediate service imports, M_R, inasmuch as this general transportation item includes passenger fares as well as charter fees paid to vessels of foreign ownership.

The service import item "insurance" represents insurance on merchandise imports and was accordingly allocated on the basis of the merchandise import ratios found for each year.[1]

"Investment income" was construed to be entirely a payment for an intermediate factor of production, capital, and allocated to imports of intermediate services, M_R. "Government not elsewhere specified," representing Philippine government expenditures abroad, was similarly construed to be entirely an intermediate service import.

The final service import item "miscellaneous" includes a wide variety of foreign services provided to Philippine consumers and businesses. In the absence of detailed data on the distribution of these payments, by year, an arbitrary decision was made to construe 50 per cent of these payments as industrial consumer services and 50 per cent as intermediate services for production.

---

[1]See Table A-I-4 for these ratios.

TABLE A-I-6

Total Imports, and Merchandise and Service Components
(million pesos, constant 1955 prices)

Year	Total	Merchandise %	Merchandise Value	Services %	Services Value
1949	1834	.797	1,461.7	.203	372.3
1950	1217	.724	881.1	.276	335.9
1951	1562	.784	1,224.6	.216	337.4
1952	1496	.759	1,135.5	.241	360.5
1953	1601	.763	1,221.6	.237	379.4
1954	1834	.756	1,386.5	.244	447.5
1955	2139	.752	1,608.5	.248	530.5
1956	2145	.752	1,613.0	.248	532.0
1957	2524	.761	1,920.8	.239	603.2
1958	2029	.786	1,594.8	.214	434.2
1959	1961	.779	1,527.6	.221	433.4
1960	2215	.780	1,727.7	.220	487.3
1961	2341	.803	1,879.8	.197	461.2
1962	2235	.742	1,658.4	.258	576.6
1963	2348	.809	1,899.5	.191	448.5
1964	2666	.826	2,202.1	.174	463.9
1965	2863	808	2,313.3	.192	549.7

APPENDIX II: Estimation of R (industrial sector payments for intermediate goods purchases from agriculture), N (agricultural sector payments for intermediate goods and services purchases from industry), and Y_g (government payments for intermediate goods purchases from industry).[1]

A. Method Used to Estimate Intersectoral Flows, R and N

The intersectoral commodity and service flows from the agricultural production sector to the industrial production sector (R) and in the opposite direction from industry to agriculture (N) were estimated from a separate study of the outputs and inputs of agriculture.[2] This study covered 33 agricultural products including crops, meat and poultry, fisheries, and forestry. The basic approach was to estimate the intersectoral flows of all 33 products combined and then to blow up these estimates to match the more comprehensive national income estimates for agriculture. Basic data for the 33 product estimates were obtained from the Department of Agriculture and Natural Resources.

---

[1]These estimates and the methods employed to produce them were developed by Joseph L. Tryon during his field work in the Philippines. He was assisted in the data work by Mrs. Lourdes Kleindienst.

[2]In the national income accounting framework shown in Diagram I-1 and in discussion in the text, these flows are viewed as monetary payments; i.e., R is considered as payments by the industrial sector for agricultural intermediate goods and services and N as payments by the agricultural sector for industrial intermediate goods and services.

The 33-product study produced data for the 33 major products of agriculture, all in constant 1955 prices. The data were organized into the following groupings:

1. Inputs to agriculture from industry:
   a. Processing and marketing of agricultural products.
   b. Industrial products utilized in agricultural production.
2. Total output of the 33 products, split into:
   a. Agricultural raw materials for industry.
   b. Agricultural products exported.
   c. Agricultural products for final domestic consumption.

The output figures were estimated both at point of origin and after processing and marketing. These flows are depicted in Diagram A-1. Primes have been used to distinguish variables in this diagram from the more comprehensive national income accounting system.

In the diagram, O' is gross output valued at the farm, and $O' + P'$ is output valued at end use after processing and marketing. The 33-product study produced estimates for the 33 products of O', P', F', and the three end uses E', E'_x, X'_d

V'_x was derived by simply subtracting F' from O'. This V'_x is essentially the value added within agriculture for the 33 products. It <u>ex</u>cludes processing and marketing since these are value added within

industry. It is gross since it covers depreciation as well as other property income and wages. Since indirect taxes on agricultural products are negligible, they have been ignored here. Thus, V'_x is the contribution of the 33 products to national income originating in agriculture, including depreciation. This relationship forms the basis for linking the 33-product study to the national income estimates. The steps by which R and N were estimated for the national income accounting system were as follows:

1. Gross value added in agriculture for the 33 products was estimated by subtracting F' from O'. This gives V'_x for the 33 products.

2. The ratio N'/V'_x was calculated for each year.

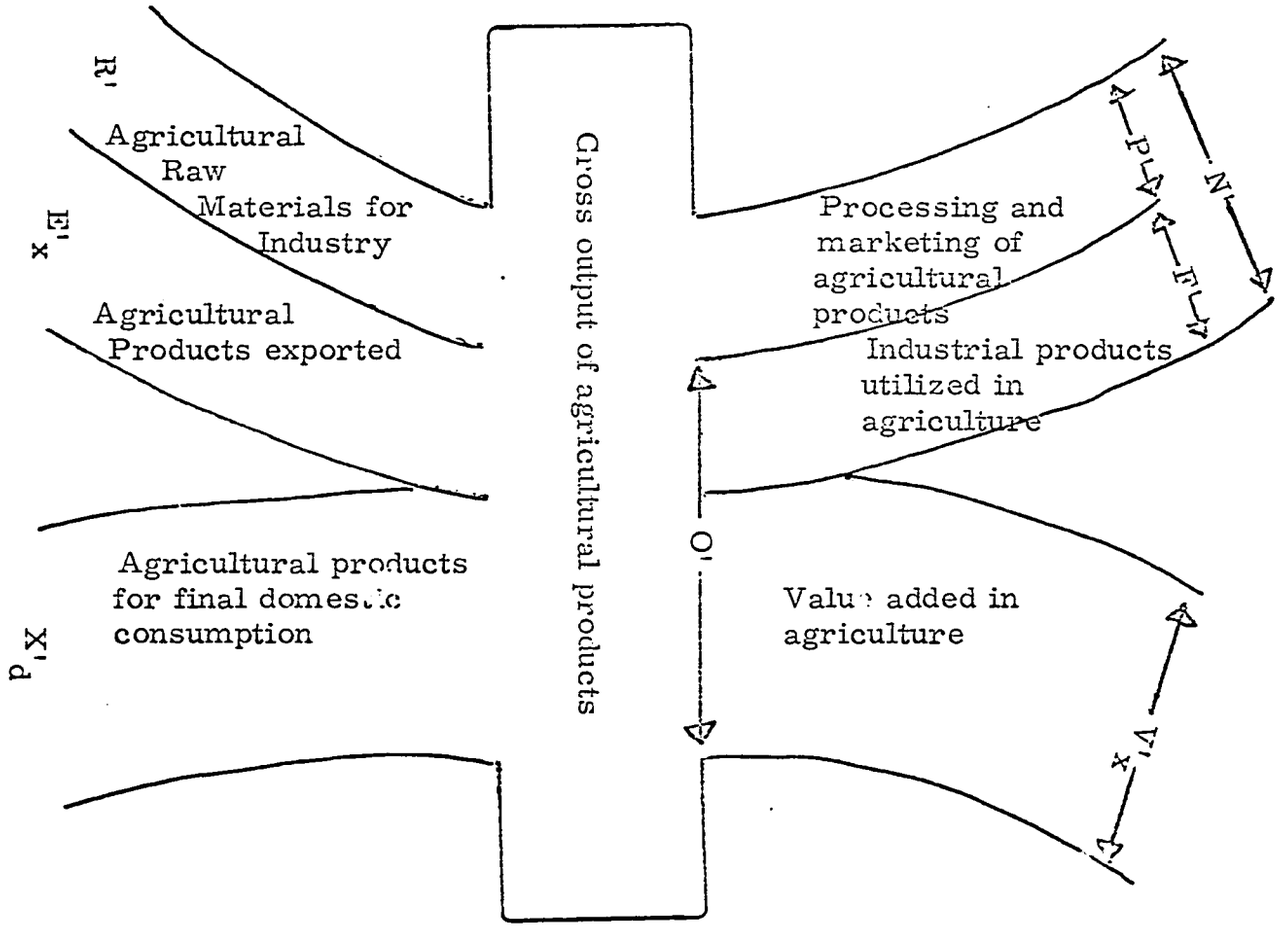
3. The value added in the agriculture series from the national income accounting framework, V_x, were multiplied by the N'/V'_x ratios. On the assumption that the 33 products are representative of all agriculture, this gives an estimate of N, the combined input to agriculture of industrial products and processing-marketing services.

4. The ratio R'/V'_x was calculated for each year.

5. The value added in the agriculture series from the national income accounting framework, V_x, were multiplied by the R'/V'_x ratios. This gives estimates of R, the agricultural raw materials flowing to industry.

DIAGRAM A-1

Agricultural Output by Supply and Demand Components



B. Method Used to Estimate Y_g

Philippine government accounts do not explicitly identify intermediate goods purchases. Yet it is apparent that such purchases are made since the government reports such items as payments for "communication and transportation services," and "supplies and materials." Investigation by Joseph L. Tryon of the disposition of agricultural output produced no evidence of significant sale of agricultural output (as intermediate goods) to government. Accordingly, it was assumed that all government intermediate goods purchases were made from the industrial sector as defined in our framework.

Since our examination of government expenditure reports revealed detailed accounting of wage, salary, and other factor payments, and consistency of these with NEC estimates of government value added, government intermediate goods purchases (all assumed from industry) were derived as the residual after subtracting value added (V_g) from government current expenditures (G); i.e.:

$$Y_g = G - V_g$$

APPENDIX III-1: Disaggregation of Government Value Added (V_g) Between Factor Payments to Industrial Households (G_h) and Agricultural Households (G_L)

V_g was disaggregated into G_h and G_L by applying the average ratios of G_h and G_L to V_g found for selected years since 1960 to the entire time series; i.e., a uniform ratio thus derived was applied to all years. The Report of the Auditor General shows the expenditures of the National and Local Governments on the different government agencies for each fiscal year (1949-65). Fiscal year expenditures, as reported, were first converted to a calendar year basis. The average ratios applied were then derived by allocating government expenditures between G_h and G_L as follows:[1]

---

[1] Specific assumptions employed were discussed with agricultural economists in the Department of Agriculture and Natural Resources.

To G_h	To G_L
Expenditures of:	Expenditures of:
Dept. of Commerce and Industry: 100%	
Dept. of Education: 14%*	Department of Education: 86%*
Dept. of Health: 14%*	Department of Health: 86%*
Dept. of Agriculture and Natural Resources: 77%**	Dept. of Agriculture and Natural Resources: 77%**
All other government agencies: 77%**	All other government agencies: 77%**
Chartered Cities: 100%	Provincial and local governments: 100%

The resulting average ratios used to disaggregate V_g for the entire time series were found to be:

$$G_h/V_g = 51.5$$

$$G_L/V_g = 48.5$$

---

*Split according to ratios of city and non-city population to total population: 14 per cent, city population to total population; 86 per cent, non-city population.

**Split according to ratios of agricultural wages and salaries and nonagricultural wages and salaries to total compensation of employees shown in the National Income Accounts.

TABLE A-III-1

Calculation of X_a

	X_d	M_x	$X_a = X_d + M_x$
1949	1,804	221	2,025
1950	1,966	92	2,058
1951	2,206	130	2,336
1952	2,485	93	2,578
1953	2,873	107	2,980
1954	3,006	120	3,126
1955	2,795	146	2,941
1956	3,056	154	3,210
1957	3,122	170	3,292
1958	3,454	151	3,605
1959	3,273	102	3,375
1960	3,002	115	3,117
1961	3,232	231	3,463
1962	3,323	130	3,453
1963	3,388	254	3,642
1964	3,158	285	3,443
1965	3,297	387	3,684

TABLE A-III-2

Calculation of Y_a-I

	Y_d	M_f	$Y_a = Y_d + M_f$	I	$Y_a - I$
1949	2,942	911	3,853	1,114	2,739
1950	3,127	563	3,690	627	3,063
1951	3,090	758	3,848	732	3,116
1952	3,158	734	3,892	651	3,241
1953	3,296	748	4,044	796	3,248
1954	3,659	869	4,528	1,020	3,508
1955	4,401	985	5,386	1,216	4,170
1956	4,638	999	5,637	1,374	4,263
1957	5,124	1,133	6,257	1,887	4,370
1958	4,965	955	5,920	1,606	4,314
1959	5,515	881	6,396	1,427	4,969
1960	5,999	1,056	7,055	1,704	5,351
1961	6,488	983	7,471	2,119	5,352
1962	6,794	865	7,659	1,940	5,719
1963	7,045	983	8,028	2,078	5,950
1964	7,540	1,121	8,661	1,886	6,775
1965	7,942	1,188	9,130	2,234	6,896

TABLE A-III-3

Calculation of W_1 and W_2

	$C_h + C_L$	C_h	C_L	$W_1 = \frac{C_h}{C_h + C_L}$	$W_2 = \frac{C_L}{C_h + C_L}$
	(1)	(2)	(3)	(4)	(5)
1949	4,764	2,628	2,136	0.55	0.45
1950	5,121	2,799	2,322	0.55	0.45
1951	5,452	2,868	2,584	0.53	0.47
1952	5,819	3,077	2,742	0.53	0.47
1953	6,228	3,153	3,075	0.51	0.49
1954	6,634	3,394	3,240	0.51	0.49
1955	7,111	3,707	3,404	0.52	0.48
1956	7,473	4,113	3,360	0.55	0.45
1957	7,662	4,287	3,375	0.56	0.44
1958	7,919	4,377	3,542	0.55	0.45
1959	8,344	4,977	3,367	0.60	0.40
1960	8,468	5,259	3,209	0.62	0.38
1961	8,815	5,461	3,354	0.62	0.38
1962	9,172	5,673	3,499	0.62	0.38
1963	9,592	5,946	3,646	0.62	0.38
1964	10,218	6,603	3,615	0.65	0.35
1965	10,580	6,804	3,776	0.64	0.36

TABLE A-III-4: Calculation of Y_h/C_h and Y_L/C_L ratios

	$(Y_a - I)$	X_a	C_h	C_L	W_1	W_2	$0.672\ W_1$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1949	2,739	2,025	2,628	2,136	0.55	0.45	0.37
1950	3,063	2,058	2,799	2,322	0.55	0.45	0.37
1951	3,116	2,336	2,868	2,584	0.53	0.47	0.36
1952	3,241	2,578	3,077	2,742	0.53	0.47	0.36
1953	3,248	2,980	3,153	3,075	0.51	0.49	0.34
1954	3,508	3,126	3,394	3,240	0.51	0.49	0.34
1955	4,170	2,941	3,707	3,404	0.52	0.48	0.35
1956	4,263	3,210	4,113	3,360	0.55	0.45	0.37
1957	4,370	3,292	4,237	3,375	0.56	0.44	0.38
1958	4,314	3,605	4,377	3,542	0.55	0.45	0.37
1959	4,969	3,375	4,977	3,367	0.60	0.40	0.40
1960	5,351	3,117	5,250	3,209	0.62	0.38	0.42
1961	5,352	3,463	5,461	3,354	0.62	0.38	0.42
1962	5,719	3,453	5,673	3,499	0.62	0.38	0.42
1963	5,950	3,342	5,943	3,646	0.62	0.38	0.42
1964	6,775	3,443	6,603	3,615	0.65	0.35	0.44
1965	6,896	3,684	6,804	3,776	0.64	0.36	0.43

TABLE A-III-4 (continued)

	0.628 W_2	Col. (7)+Col. (8)	$\frac{(Y_2-I)}{C_h+C_L}$	Adjustment Factor Col. (10)/Col. (9)	Adjusted Y_h/C_h 0.672 x Col. (11)	Adjusted Y_L/C_L 0.628 x Col. (11)
	(8)	(9)	(10)	(11)	(12)	(13)
1949	0.28	0.65	0.58	0.89	0.60	0.56
1950	0.28	0.65	0.60	0.90	0.60	0.57
1951	0.30	0.66	0.57	0.86	0.58	0.54
1952	0.30	0.66	0.56	0.85	0.57	0.53
1953	0.31	0.65	0.52	0.80	0.54	0.50
1954	0.31	0.65	0.53	0.82	0.55	0.52
1955	0.30	0.65	0.59	0.91	0.61	0.57
1956	0.28	0.65	0.57	0.88	0.59	0.55
1957	0.27	0.65	0.57	0.88	0.59	0.55
1958	0.28	0.65	0.54	0.83	0.56	0.52
1959	0.25	0.65	0.60	0.92	0.62	0.58
1960	0.24	0.66	0.63	0.95	0.64	0.60
1961	0.24	0.66	0.61	0.92	0.62	0.58
1962	0.24	0.66	0.62	0.94	0.63	0.59
1963	0.24	0.66	0.62	0.94	0.63	0.59
1964	0.22	0.66	0.66	1.00	0.67	0.63
1965	0.23	0.66	0.65	0.98	0.66	0.62

Note (1) $\frac{C_h}{C_h + C_L} = W_1$ (2) $\frac{C_L}{C_h + C_L} = W_2$ (3) Initial $Y_h/C_h = 0.672$ (4) Initial $Y_L/C_L = 0.628$

TABLE A-III-5 Calculation of Y_h, X_h: Y_L, X_L (Million Pesos, 1955 Constant Prices)

	(Y_a-I)	X_a	C_h	C_L	Y_h Value	Y_h % of C_h[1]	$Y_L=(Y_a-I)-Y_h$	$X_L=C_L-Y_L$	$X_h=X_a-X_L$
	(1)	(2)	(3)	(4)	(5)		(6)	(7)	(8)
1949	2,739	2,025	2,628	2,136	1,577	0.60	1,162	974	1,051
1950	3,063	2,058	2,799	2,322	1,679	0.60	1,384	938	1,120
1951	3,116	2,336	2,868	2,584	1,660	0.58	1,453	1,131	1,205
1952	3,241	2,578	3,077	2,742	1,754	0.57	1,487	1,255	1,323
1953	3,248	2,980	3,153	3,075	1,703	0.54	1,545	1,530	1,450
1954	3,508	3,126	3,394	3,240	1,867	0.55	1,641	1,599	1,527
1955	4,170	2,941	3,707	3,404	2,261	0.61	1,909	1,495	1,446
1956	4,263	3,210	4,113	3,360	2,427	0.59	1,836	1,524	1,686
1957	4,370	3,292	4,287	3,375	2,529	0.59	1,841	1,534	1,758
1958	4,314	3,605	4,377	3,542	2,451	0.56	1,863	1,679	1,926
1959	4,969	3,375	4,977	3,367	3,086	0.62	1,883	1,484	1,891
1960	5,351	3,117	5,259	3,209	3,366	0.64	1,985	1,224	1,893
1961	5,352	3,463	5,461	3,354	3,386	0.62	1,966	1,388	2,075
1962	5,719	3,453	5,673	3,499	3,574	0.63	2,145	1,354	2,099
1963	5,950	3,642	5,946	3,646	3,746	0.63	2,204	1,442	2,200
1964	6,775	3,443	6,603	3,615	4,424	0.67	2,351	1,264	2,179
1965	6,896	3,684	6,804	3,776	4,491	0.66	2,405	1,371	2,313

[1] Adjusted Y_h/C_h

APPENDIX III-2: Estimation of Consumption Expenditures on Industrial and Agricultural Goods by the Industrial and Agricultural Households

The NPA national income accounting framework shows consumption expenditures for both industrial and agricultural households disaggregated by expenditures for industrial and agricultural goods:

(1) $C_h = Y_h + X_h$

where C_h = consumption expenditures by industrial households

Y_h = industrial households' expenditures for industrial goods

X_h = industrial households' expenditures for agricultural goods

and

(2) $C_L = Y_L + X_L$

where C_L = consumption expenditures by agricultural households

Y_L = agricultural households' expenditures for industrial goods

X_L = agricultural households' expenditures for agricultural goods

With C_h and C_L already determined, one of the two remaining terms in equations (1) and (2) must be estimated. The two flows to be estimated are Y_L and X_h, the remaining term in each equation to be determined residually.

The two flows which are required (Y_L and X_h) are shown in Diagram A-2 taken from the NPA national income accounting framework. (Y_L is the share of consumption expenditures by agricultural households which is devoted to purchases of industrial goods and services, and X_h is the share of consumption expenditures by industrial households which is devoted to agricultural products.)

In addition to C_h and C_L, $(Y_a - I)$ and X_a are also taken as previously determined. The problem is to estimate Y_L and X_h. Certain relationships between the various flows exist that must be taken into account. The two needed for our purposes are as follows:

$$(3) \quad (Y_a - I) + X_a = C_h + C_L$$

$$(4) \quad \frac{(Y_a - I)}{C_h + C_L} = \frac{Y_h}{C_h} W_1 + \frac{Y_L}{C_L} W_2$$

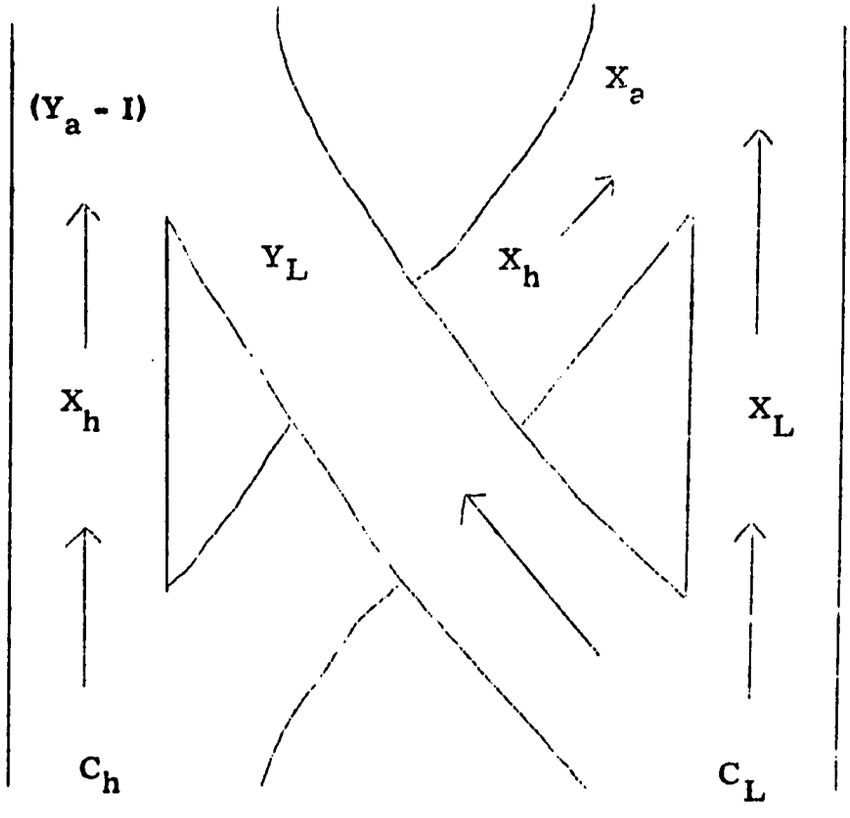
$$\text{where} \quad W_1 = \frac{C_h}{C_h + C_L} \quad \text{and} \quad W_2 = \frac{C_L}{C_h + C_L}$$

These two equations are based, respectively, on (a) the condition that the inflow must equal the outflow of the network and (b) the aggregative ratio of consumption of industrial (or agricultural) goods and services to total consumption will be a weighted average of the same ratios for the individual sectors, with the weights being the proportion each household sector has of total consumption.

Equation (3) will be met as long as the estimation procedure for the four variables $(Y_a - I)$, X_a, C_h, and C_L is consistent. It is assumed that this condition is met. Therefore, only equation (4) will require estimation.

Examination of equation (4) shows that the unknowns are Y_h/C_h and Y_L/C_L. The components of the ratio on the left and the two weights are all known. Under these conditions the two unknown ratios cannot be estimated independently; as soon as one is estimated, the other is fixed. One could proceed by estimating one ratio and accepting the corresponding estimate of the other. This procedure has the disadvantage that the second ratio may be quite unreasonable. A better alternative would seem to be to adjust both together to obtain reasonable values of each ratio. Regardless of the method used, the values chosen are to some extent arbitrary. The method employed below is thus not the only one that could be used. Further, if a particular method produces unreasonable results,

DIAGRAM A-2: EXPENDITURE DISAGGREGATION BY SECTOR



there is nothing to prevent the adjustment of the two ratios by personal judgment. The only requirement is that equation (4) be met for each year.

The only source of data available at present that can be used for estimating Y_h/C_h and Y_L/C_L is the PSSH survey of income and expenditures for 1961.[1] (The earlier 1957 PSSH survey shows internal inconsistencies which suggest that its use would produce such peculiar results that they would seriously distort the whole system.) This 1961 survey, however, provides only one observation and is based on a cross-section survey, not an aggregative one. Further, the breakdowns available in the survey do not correspond exactly to the definitions of the agricultural and industrial household sectors. The 1961 survey thus will provide only a starting point.

Table 25 of the 1961 survey provides detailed consumption expenditures, as per cent of total consumption expenditures, for urban and rural households (Table 25, pp. 29ff). This urban-rural classification comes closest of any in the survey to matching the industrial-agricultural sectors which are desired. The consumption expenditures of Table 25

---

[1] Bureau of the Census and Statistics, Republic of the Philippines, The Philippine Statistical Survey of Households Bulletin, Series No. 14, Family Income and Expenditures, April 1961 (published March 1964).

are sufficiently detailed to permit classification according to their source, agriculture or industry. (The basic rule is that a particular good or service is industrial [agricultural] in origin if 50 per cent or more of its value added is from industry [agriculture].)

From this PSSH table the preliminary estimates of Y_h/C_h and Y_L/C_L were made. In general, one would expect that the fraction of consumption expenditures devoted to industrial goods purchases would be larger for industrial households than for agricultural households; i.e., that $Y_h/C_h > Y_L/C_L$. A cursory look at Table 25 shows this to be true for 1961. It would only be accidental, however, for the preliminary estimates to meet equation (4) exactly. The ratios, therefore, had to be adjusted to meet (4). This was done in such a way as to keep the relative relationship between the two ratios constant, as follows:

Step 1. All terms of equation (4), including the preliminary estimates of Y_h/C_h and Y_L/C_L, were filled in. The equation would not yet hold.

Step 2. The ratio of the left side to the right was computed ("adjustment factor").

Step 3. The preliminary ratios Y_L/C_L and Y_h/C_h were multiplied by the number calculated in Step 2. These new values are the adjusted ratios. They meet the condition of equation (4) exactly.

It was a simple matter to obtain the various unknown flows once the "adjusted" Y_h/C_h and Y_L/C_L were known. The following relationships obviously hold:

a. $Y_h = \frac{Y_h}{C_h} \times C_h$

b. $Y_L = (Y_a - I) - Y_h$

c. $X_L = C_L - Y_L$

d. $X_h = X_a - X_L$

The series of calculations to implement this method and produce estimates of Y_h, X_h, Y_L, and X_L for the years 1949-65 are exhibited in Tables A-III-1 through A-III-5.

APPENDIX IV: Estimates of Private Sector Savings and Depreciation

A. PRIVATE SECTOR SAVINGS

Our estimates for the period 1951-60 are derived from R. W. Hooley's study, Saving in the Philippines, 1951-1960,[1] and estimates for the years 1949-50 and 1961-65 are based upon an extension of his methodology. Hooley's current price data are used for the period 1951-60. The latter, as well as our own extensions, are deflated by the NEC deflator, given annually in their accounts for investment.

Extension of Hooley's estimates back to 1949 and forward to 1965 follows Hooley's methods with extrapolation from sampling data for corporate sector savings and direct estimation (similar to Hooley's) for saving by unincorporated businesses and households. Thus, there are three basic components in the NPA estimates of private sector savings: (1) corporate savings, (2) unincorporated business saving, and (3) household saving (see Diagram III-9 in text).

---

[1] R. W. Hooley, Saving in the Philippines, 1951-1960 (Quezon City: University of the Philippines, Institute of Economic Development and Research, 1963).

To apply the results to the NPA framework, private savings from the corporate sector and unincorporated businesses are allocated to the industrial sector. In addition, a part (the larger part) of household savings is allocated to the industrial sector. The residual, after deducting the industrial sector share from household savings, is considered agricultural sector savings.

Diagram III-9 in the text shows that depreciation and net savings are distinguished for both gross industrial savings, S_h, and for gross agricultural savings, S_L. This latter breakdown is needed for obtaining the depreciation component in V_y and V_x (respectively, gross value added by industry and agriculture in the NPA framework). Gross value added is defined in the text (Section III-B) for each sector as net value added plus depreciation plus indirect taxes.

Hooley's study provides estimates of gross saving from three sectors: government, corporate, and household. Since our estimates of government savings are based on other sources, our use of Hooley's estimates, and extrapolation therefrom, concerns only private sector savings.

Since our time coverage is from 1949 to 1965, Hooley's estimates of corporate and household savings were extended backward from 1951 to 1949 and forward from 1960 to 1965. The procedures by which this was done are now discussed.

Corporate Gross Savings

We employ Hooley's definition:

Corporate gross saving = Retailed Earnings less Cash dividend payments.

Samples of 35 corporations were taken, and their savings, thus defined, were estimated for each year from 1949 to 1951 and from 1960 through 1965. Our estimates for 1951 and 1960 overlap with Hooley's estimates. Using these overlap years' estimates, the following ratios between Hooley's larger sample and our own were established.[1]

$$1951: \quad \frac{\text{Hooley 1951 sample}}{\text{NPA 1951 sample}} = \frac{186.8}{4.1} = 46.1$$

Thus, for 1949-51, Hooley's estimates for corporate saving are taken as 46.1 times the value found from NPA's smaller sample. This ratio is used to "blow up" the gross savings estimates from the sample corporations for 1949 and 1950.

---

[1] For both 1949-51 and 1960-65 this relationship was established for "industrial" corporations. Saving by "agricultural" corporations, a small component of total corporate saving, was estimated for these periods by sample trend.

A similar method was used to estimate corporate saving for 1961 through 1965 based on the following ratio:

$$1960: \quad \frac{\text{Hooley's 1960 sample}}{\text{NPA 1960 sample}} = \frac{520.2}{44.7} = 11.64$$

Hence, for 1960-65, our estimates of corporate savings are taken as 11.64 times the value of savings found for the smaller NPA sample.

Results for both periods (1949-51 and 1960-65) are presented in Table A-IV-1.

Gross Saving by Unincorporated Businesses and Households

Hooley's study (Table D-15, p. 109) shows the composition of the household sector's saving for 1951-60. The values of these components were directly estimated for the additional years, 1949-50 and 1961-65. For this purpose the same sources and methods used by Hooley were employed.[2]

---

[2]These are given in Hooley, op. cit., Table D-15, p. 109.

Hooley's household saving estimate included both unincorporated businesses and households proper. Since these were to be distinguished for our purposes (see below), they were separated in our estimates on the basis of Hooley's suggested proportion.

These current price estimates for the three components for the years not covered by Hooley were combined with Hooley's estimates to give us the current price series shown in Tables A-IV-2 and A-IV-3. The current price series were then deflated to 1955 base year values by using NEC's implicit price deflator for gross domestic investment. Annual values of the deflator are shown in Tables A-IV-2 and 4. The deflated series are shown in Table A-IV-2 (Column 3) for household savings and in Table A-IV-4 (Column 3) for corporate and unincorporated businesses combined.

The final step involved allocation of private savings between the industrial and agricultural sectors; i.e., industrial savings, S_h, and agricultural savings, S_L. This breakdown followed these divisions:

S_h	S_L
All corporate saving	Part of household saving
All unincorporated business saving	
Part of household saving	

In the absence of an empirical basis for annual ratios to disaggregate household saving between industry and agriculture, a fixed ratio, derived from the Philippine Statistical Survey of Households (1957) was employed.[3] The ratio employed was:

.57 to S_h

.43 to S_L

---

[3]The 1957 PSSH was employed in lieu of the 1961 PSSH for this purpose. The 1961 results show the following (all in thousand pesos):

	Total	Non-agric.	Agric.
Income*	7,981,766	4,468,973	3,512,793
Family Expend.**	7,934,063	4,045,031	3,889,032
NET SAVING	47,703	423,942	(-376,239)

*PSSH Bulletin (Series No. 14), April 1961, Table 12, p. 11.

**Ibid., Table 25, p. 29.

The aggregate saving-income relationship in this survey is inconsistent with our independent estimate of total household savings. The aggregate results cast doubt on the possibility that agricultural savings were negative, reducing net savings for the two sectors to the small total suggested above (.006 per cent of total income of families surveyed).

The 1957 results are more consistent with our aggregate private sector savings estimate.

The fixed ratio was obtained from data presented in Tables 11 and 22, pages 28 and 41, respectively, of the PSSH Bulletin, March 1957. The results are shown in Table A-IV-5.

Total industrial sector saving, S_h, and total agricultural saving, S_L, thus derived, are presented in Table A-IV-6. These are combined with government saving, S_g, to show total domestic saving, S, in Table A-IV-7.

B. DEPRECIATION

Total depreciation was estimated by employing Hooley's ratios of total depreciation to total gross saving.[4] For the years estimated by Hooley (1951-60) Hooley's annual depreciation ratios were used. For 1949 and 1950 the average depreciation ratios found by Hooley for 1951-55 were employed and for 1961-65, Hooley's averages for 1956-60. There was a sharp break in these ratios in Hooley's estimates for the two periods thus distinguished. The resulting estimates of depreciation are presented in Table A-IV-8.

---

[4]Richard W. Hooley, op. cit., Table A-1, p. 74.

Total depreciation was allocated between the industrial sector and the agricultural sector on the basis of annual ratios employed for this purpose in the NEC national income accounts ("old series"). The series, thus derived, are shown in Table A-IV-9.

Sources

1. R. W. Hooley, Saving in the Philippines: 1951-1960 (Quezon City: University of the Philippines, Institute of Economic Research and Development, 1963).

2. R. F. Gatica and A. D. Gatica, eds., Manual of Philippine Securities: 1966 and 1962

3. Central Bank of the Philippines, Statistical Bulletin Vol. XVII, No. 4 (December 1965).

4. Various issues of National Economic Council, Statistical Reporter.

5. PSSH Bulletin (March 1957).

TABLE A-IV-1

Estimate of Gross Saving: Corporate Sector, 1949-1951 and 1960-1965

			Gross Saving: Corporate (million pesos, current prices)
1949	(2.1) (46.1)	=	96.8
1950	(3.2) (46.1)	=	148.0
1951	(Hooley's)	=	192.3
-			-
1960	(Hooley's)	=	524.7
1961	(50.2) (11.64)	=	584.3
1962	(61.3) (11.64)	=	713.5
1963	(77.6) (11.64)	=	903.3
1964	(81.8) (11.64)	=	952.2
1965	(100.7) (11.64)	=	1,172.1

TABLE A-IV-2

Gross Saving: Household Sector (at current and 1955 constant prices, million pesos)

	Gross Saving at Current Prices	Deflator*	Gross Saving at 1955 Prices
	(1)	(2)	(3)
1949	267.8	93.7	285.8
1950	329.1	96.3	341.7
1951	317.8	112.9	281.5
1952	391.2	127.2	307.6
1953	442.3	117.3	377.1
1954	442.0	105.2	420.2
1955	393.2	100.0	393.2
1956	622.1	106.6	583.6
1957	695.4	109.7	634.0
1958	657.1	114.5	573.9
1959	750.0	120.7	621.4
1960	800.8	115.6	692.7
1961	1,153.4	131.5	879.4
1962	1,118.5	150.0	745.7
1963	1,324.3	160.8	823.6
1964	1,067.0	169.2	630.6
1965	1,269.1	170.7	743.5

*NEC, Implicit price deflator for Gross Domestic Investment.

TABLE A-IV-3

Gross Saving: Corporate and Unincorporated Businesses
(million pesos, current prices)

	Corporate			Unincorporated	Total Corp.
	Non-agric.	Agric.	Total	Businesses	& Unincorp.
	(1)	(2)	(3)	(4)	(5) = (3) + (4)
1949	96.8	3.3	100.1	102.2	202.3
1950	148.0	3.4	151.4	197.0	348.4
1951	188.8	3.5	192.3	104.9	297.2
1952	193.6	3.6	197.2	102.2	299.4
1953	198.8	3.8	202.6	202.1	404.7
1954	242.2	4.0	246.2	138.8	385.0
1955	287.0	4.0	291.0	126.4	417.4
1956	422.4	3.9	426.3	164.8	591.1
1957	423.4	3.9	427.3	240.9	668.2
1958	520.6	4.1	524.7	193.2	717.9
1959	547.2	4.3	551.5	245.7	797.2
1960	520.2	4.5	524.7	174.7	699.4
1961	584.3	4.6	588.9	470.6	1,059.5
1962	713.5	4.7	718.2	522.0	1,240.2
1963	903.3	4.8	908.1	586.6	1,494.7
1964	952.2	4.9	957.1	236.8	1,193.9
1965	1,172.1	5.0	1,177.1	423.5	1,600.6

TABLE A-IV-4

Gross Saving: Corporate and Unincorporated Business Combined
(million pesos, at current and 1955 constant prices)

	Gross Saving Corporate & Unincorporated Business (at current prices)	Deflator*	Gross Saving Corporate & Unincorporated Business (at 1955 prices)
1949	202.3	93.7	216.0
1950	348.4	96.3	361.8
1951	297.2	112.9	263.2
1952	299.4	127.2	235.4
1953	404.7	117.3	345.0
1954	385.0	105.3	365.6
1955	417.4	100.0	417.4
1956	591.1	106.6	554.5
1957	668.2	109.7	609.1
1958	717.9	114.5	627.0
1959	797.2	120.7	660.5
1960	699.4	115.6	605.0
1961	1,059.5	131.5	805.7
1962	1,240.2	150.0	826.8
1963	1,434.7	160.8	929.5
1964	1,193.9	169.2	705.6
1965	1,600.6	170.7	937.7

*NEC, Implicit price deflator for Gross Domestic Investment.

TABLE A-IV-5

Gross Saving: Household Sector, by Agricultural and Non-agricultural (Industrial)
(million pesos at constant 1955 prices)

	Gross Saving (1)	Agricultural Households (2)	Non-agricultural Households (3)
1949	286	122	164
1950	342	147	195
1951	282	121	161
1952	308	132	176
1953	377	162	215
1954	420	181	239
1955	393	169	224
1956	584	251	333
1957	634	273	361
1958	574	247	327
1959	621	267	354
1960	693	297	396
1961	879	378	501
1962	746	321	425
1963	824	354	470
1964	631	271	360
1965	744	320	424

TABLE A-IV-6

Private Sector Gross Saving, by Industry Sector (S_h), and Agricultural Sector (S_L)
(million pesos, at constant 1955 prices)

	Industry			Agricultural	Total
	Corp. & Unincorp. Businesses (1)	Part of Household (2)	Total (S_h) (3)	Part of Household Gross Saving (S_L) (4)	Gross Private Saving ($S_h + S_L$) (5)
1949	216	164	380	122	502
1950	362	195	557	147	704
1951	263	161	424	121	545
1952	235	176	411	132	543
1953	345	215	560	162	722
1954	366	239	605	181	786
1955	417	224	641	169	810
1956	555	333	888	251	1,139
1957	609	361	970	273	1,243
1958	627	327	954	247	1,201
1959	661	354	1,015	267	1,282
1960	605	396	1,001	297	1,298
1961	806	501	1,307	378	1,685
1962	827	425	1,252	321	1,573
1963	930	470	1,400	354	1,754
1964	706	360	1,066	271	1,337
1965	938	424	1,362	320	1,682

TABLE A-IV-7

Gross Domestic Saving (S), by Sectoral Component
(million pesos, constant 1955 prices)

	S_h	S_L	S_g	$S = S_h + S_L + S_g$
	(1)	(2)	(3)	(4)
1949	380	122	-51	451
1950	557	147	-15	689
1951	424	121	80	625
1952	411	132	119	662
1953	560	162	60	782
1954	605	181	108	894
1955	641	169	100	910
1956	888	251	96	1,235
1957	970	273	111	1,354
1958	954	247	131	1,332
1959	1,015	267	-14	1,268
1960	1,001	297	169	1,467
1961	1,307	378	142	1,827
1962	1,252	321	230	1,803
1963	1,400	354	226	1,980
1964	1,066	271	312	1,649
1965	1,362	320	408	2,090

TABLE A-IV-8

Estimate of Depreciation (at constant 1955 prices) using Hooley's proportion of total depreciation to total Gross Saving

	Gross Saving (at 1955 Prices)	Depreciation (at 1955 Prices)	Depreciation as % of Gross Saving (Hooley's)
	(1)	(2)	(3)
1949	451	230	51.0*
1950	689	351	51.0*
1951	625	334	53.4
1952	662	302	45.6
1953	782	352	45.0
1954	894	512	57.3
1955	910	482	53.0
1956	1,235	535	43.3
1957	1,354	542	40.0
1958	1,332	571	42.9
1959	1,268	531	41.9
1960	1,467	609	41.5
1961	1,827	766	41.9**
1962	1,803	755	41.9**
1963	1,980	830	41.9**
1964	1,649	691	41.9**
1965	2,090	873	41.9**

*Average of 1951-55 percentages

**For 1961-65, average of 1956-60 percentages

TABLE A-IV-3

Depreciation: Agriculture and Nonagricultural*
(million pesos, constant 1955 prices)

	Total Depreciation (at 1955 prices)	To Agriculture (Value)	%	To Industry (Value)	%
1949	230	45	19.4	185	80.6
1950	351	71	20.3	280	79.7
1951	334	69	20.5	265	79.5
1952	302	60	20.0	242	80.0
1953	352	71	20.2	281	79.8
1954	512	107	21.0	405	79.0
1955	482	97	20.2	385	79.8
1956	535	105	19.7	430	80.3
1957	542	100	18.5	442	81.5
1958	571	108	18.9	463	81.1
1959	531	89	16.8	442	83.2
1960	609	99	16.4	510	83.6
1961	766	116	15.1	650	84.9
1962	755	109	14.4	646	85.6
1963	830	117	14.1	713	85.9
1964	691	93	13.4	598	86.6
1965	876	112	12.8	764	87.2

*Split between agriculture and nonagriculture using ratios obtained from the National Income Accounts (NEC).

APPENDIX V: The NEC "New Series" Estimates of Consumption, Savings, and Investment

A new series of national income estimates were published by the National Economic Council in the April-June, 1967, issue of The Statistical Reporter. The new series, covering only the years 1962 through 1966 and not yet reconciled with the previous series, represents considerable improvements in estimation procedures and data sources. Of particular significance is the fact that these new estimates for the first time include a direct estimate of personal consumption expenditures. Moreover, they present estimates of capital formation based on much more satisfactory and complete data sources than the previous series.

These estimates are not employed for our series since they cover only the four-year period 1962-65 and have not yet been linked to the old series. Inasmuch as they represent more satisfactory estimates of the income nexus components, however, we compare them with both the old series and our own estimates for the year in which all three series overlap. It should be borne in mind that our estimates (NPA series) are based on our own independent estimates of savings, as discussed in Appendix IV. It is reassuring to find that our income nexus estimates, derived prior to publication of NEC's new series, are closer in result

to the new series than the old series. The major change between the old and new NEC series for the 1962-65 period is upward revisions of investment and domestic savings in the new series. A similar upward revision of the savings and investment levels resulted from our own estimates.

Since we have employed the NEC estimates for gross national product in our series of estimates, a comparison of the three series is made in terms of ratios of consumption, investment, and domestic savings to gross national product. This comparison is presented in Table A-V-1.

It will be noted that the NPA series behave less erratically than either of the NEC series. Consumption, for example, varies between 76.4 and 78.6 per cent of GNP in the NPA series but falls drastically in the new NEC series from 80.7 to 70 per cent of GNP in the four-year period. Savings behave in a similar erratic fashion in the new NEC series but show more consistent behavior in the NPA series. We find no basis in the depressed years 1962-65 to explain a substantial rise in domestic savings (and in gross investment) as suggested in the NEC series.

Moreover, the new NEC series shows very wide (implicit) savings in the estimated difference between gross investment and domestic savings; i.e., in the level of foreign capital inflow. In 1962, the new series showed a capital inflow (I-S) equivalent to 4.0 per cent of GNP while for 1963, it shows an outflow equivalent to .9 per cent of GNP and, for 1965, an outflow equivalent to 1.4 per cent of GNP. Our revisions of foreign nexus flows discussed in Section III-A do not show such erratic behavior in the level of foreign capital inflows.

TABLE A-V-1

Consumption (C), Investment (I), and Domestic Savings (S) as Shares of GNP: New NEC Estimates, Old NEC Estimates, NPA Estimates[1]

	NEC		NPA
	Old	New	
1. C/GNP*			
1962	.832	.807	.764
1963	.775	.742	.758
1964	.778	.732	.786
1965	.782	.70	.766
2. I/GNP			
1962	.090	.142	.162
1963	.100	.152	.164
1964	.120	.173	.145
1965	.108	.171	.162
3. S/GNP**			
1962	.081	.102	.150
1963	.134	.163	.157
1964	.128	.172	.127
1965	.134	.185	.151

*C = private consumption.
**S = domestic savings; i.e., GNP - Consumption - Current Government Expenditures.

[1]All ratios calculated from constant (1955) price estimates.