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AN INTER-INDUSTRY MODEL OF THE PHILIPPINE ECONOMY FOR 1961

by

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1. **Preliminaries.** This communication is an abridged version of an earlier report on a study undertaken jointly by the University of the Philippines' School of Economics and the Bureau of the Census and Statistics with the support of the Ford Foundation.

The leader will be assumed to be familiar with the terminology and fundamental ideas of input-output analysis and methodology. A number of references on this subject have been included in the bibliography at the end of the paper.

The basic classification of the productive sectors adopted has been broadly patterned after the *United Nations International Standard Classification of All Economic Activities* (ISIC). To determine the imported component of the industry total supply of goods and services, the ISIC classification scheme has been matched with the *United Nations Standard International Trade Classification* (SITC).

Domestic outputs are valued at producer prices (i.e. ex-farm and ex-factory, or f.o.b.) while imports are calculated in c.i.f. values. Since inputs shown in establishment reports are valued at purchaser's price, producer's value is derived by deducting from reported costs the amounts of inputs attributed to trade, transport services and indirect taxes. These margins are then distributed to their respective sectors.

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A detailed description and enumeration of our input-output industry classification is given as follows:

NO.		ISIC CLASSIFICATION
1	*Agriculture, Fishing, Forestry*: palay, corn (both unmilled), export crops (e.g. unprocessed sugar cane, coconut, tobacco, abaca), fruits and vegetables, livestock and poultry, others (e.g. ramie, cotton); forestry, logging; fishing.	013-019 021-022 0111-0114 0121-0123 041, 043
2	*Mining and Quarrying*: non-metallic products (e.g. coal, crude petroleum and natural gas), metallic products (e.g. gold, iron, silver and others); quarrying covers stone, marble, limestone, sand, gravel, clay and rock salt.	
3	*Food Manufactures*: cigars, cigarettes and related products, leaf tobacco (cured or redried).	201-209
4	*Beverages*: liquors, wines, brewery and malt products, soft drinks.	211-312 214
5	*Tobacco Products*: cigars, cigarettes and related products, leaf tobacco ((cured or redried).	221-222
6	*Textile Products*: knitting mill products, textile mill products, cordage, twine and net, other textile products.	231-233 239
7	*Footwear*: footwear, wearing apparel, other made-up textile products,	241 243-244
8	*Wood Products*: sawmill and planning products, wooden containers, cane wares, cork and other wood products.	251-253 259
9	*Furniture and Fixtures.*	261
10	*Paper Products*: paper, paper products.	271-272

NO.		ISIC CLASSIFICATION
11	*Printed Materials*: newspapers, periodicals and books, commercial printing products, bookbinding and service industries.	281-283
12	*Leather Products*: leather, leather and leather substitute products.	291, 293
13	*Rubber Products*: rubber footwear, tires and related products, other rubber products.	301-302 309
14	*Chemicals*: basic industrial chemicals, vegetables and animal fats and oils.	311-313 319
15	*Petroleum Products*: petroleum refinery, miscellaneous products of petroleum and coal.	321 329
16	*Non-metallic Products*: glass and glass products, structural clay products, cement, pottery, china and earthenware.	331-334 339
17	*Ferrous Metal Products*: iron and steel, ferrous metal products.	341-342
18	*Non-ferrous Metal Products*: tin-aluminum wares, structural metal products, cutlery, hand tools and general hardware, stamped, coated and engraved metal, fabricated wire products, heating, cooking and plumbing equipment (except electrical).	351-357 359
19	*Non-electrical Machinery*: farm machinery, metal working machinery, special industrial machinery, general industrial machinery, household type service, machines and appliances, other non-electrical machinery.	362-365 367,369
20	*Electrical Machinery*: electrical distribution and control apparatus, electrical communication equipment, household electrical appliances, wiring devices, miscellaneous electrical machinery and equipment.	371-374 379

NO.		ISIC CLASSIFICATION
21	*Transport Equipment*: ship-building, motor vehicles, repair shop products, bicycles, tricycles and other equipment.	381 383-385 389
22	*Miscellaneous Manufactures*: professional-scientific measuring and controlling instruments photographic equipment and supplies, jewelry, silverwares and plated wares, musical instruments, other miscellaneous manufactures.	394 399
23	*Construction*: residential, commercial, industrial, and institutional, special trade contractors, heavy construction (e.g. highways, bridges, harbors, airports, etc.).	441 419 412
24	*Wholesale and Retail Trade*:	611-619 621-629
25	*Transport Services*: travel and freight services on land, sea, and air, including forwarding, shipping, tourist and brokerage services.	711-717
26	*Communication*: communication services including telephone and telegraph.	731-732
27	*Electricity, Gas and Water*:	511-512 521
28	*Real Estate, Banking, and Insurance*:	
29	*Other Services*: business services (e.g. legal, accounting and auditing, engineering and technical services), recreational services (e.g. radio, television, movies and theaters), personal services (e.g. restaurants, hotels, barber shops, beauty parlors, etc.)	

Items 3 to 22 are groups of establishments primarily engaged in the same or similar lines of economic activity which can generically be termed *manufacturing industries*. The class-

ification adopted here are based on the guidelines set by the *United Nations International Recommendation in Basic Industrial Statistics: A Guide to Objectives and Definition* and, of course, the ISIC.

While most of the materials used in this study are taken from published and unpublished data in the Bureau of the Census and Statistics, other statistical agencies of the government have also substantially contributed both supplementary and primary unpublished information. A complete rundown of these sources of information is as follows:

SECTORS	*SOURCES OF DATA*
Agriculture, Forestry, Fishing (Number 1)	BCS 1960 Census of Agriculture Bureau of Agricultural Economics Philippine Coconut Administration Bureau of Forestry Philippine Fisheries Commission BCS 1961 Census on Forestry, Logging, and Fishing
Mining and Quarrying (Number 2)	BCS 1961 Economic Census for Mining and Quarrying Bureau of Mines BCS Industry Division
Manufacturing Industries (Numbers 3 to 22)	BCS 1961 Economic Census for Manufacturing
Construction (Number 23)	BCS 1961 Economic Census on Construction BCS Industry Division Philippine Contractors Assooiation Bureau of Public Highways Department of Public Works Civil Aeronautics Administration National Waterworks and Sewerage Authority Manila Railroad and Philippine Railways Companies Manila Gas Company Bureau of Telecommunications People's Homesite and Housing Corporation
Wholesale and Retail Trade (Number 24)	BCS 1961 Economic Census on Commerce BCS Business Division Bureau of Commerce

SECTORS	*SOURCES OF DATA*
Transport Services and Communication (Numbers 25 and 26)	BCS 1961 Economic Census on Transportation Land Transportation Commission Bureau of Telecommunications Bureau of Posts BCS Utilities Division
Electricity, Gas and Water (Number 27)	Manila Electric Company NAWASA Office of Economic Coordination BCS Utilities Division
Real Estate, Banking and Insurance (Number 28)	Central Bank Insurance Commission Philippine National Bank Development Bank of the Philippines Philippine National Cooperative Bank Social Security System Government Service Insurance System
Other Services (Number 29)	BCS 1961 Economic Census on Services BCS Services Division University of the Philippines Bureau of Private Schools Bureau of Public Schools Bureau of Vocational Schools

2. **The 1961 Inter-Industry Matrices.** Based on classification described in detail in the previous section the input-output transactions matrix, the output and input matrices of coefficients, and the inverse of the matrix of produced input coefficients have been determined. They are exhibited in the following Tables 1 - 4.

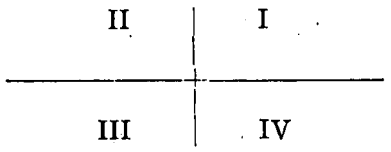
	Sector	1 Agriculture Fishing Forestry	2 Mining	3 Food Manufactures	Be
1	Agriculture, Fishing, Forestry	75,205	4,113	271,542	
2	Mining		981	1,402	
3	Food Manufactures	165,198		195,246	
4	Beverages				
5	Tobacco Products				
6	Textile Products	4,969		14,531	
7	Footwear				
8	Wood Products	1,860	69		
9	Furniture and Fixtures				
10	Paper and Paper Products	343	29	13,735	
11	Printed Materials	13	7		
12	Leather and Leather Products				
13	Rubber Products	8	8	9	
14	Chemicals	72,767	1,763	15,865	
15	Petroleum Products	22,513	11,296	26,488	
16	Non-Metallic Products		7	13,990	
17	Ferrous Metal Products		2,155	1,165	
18	Non-Ferrous Metal Products	154	14	1,777	
19	Non-Electrical Machinery	4,144	1,255		
20	Electrical Machinery	199			
21	Transport Equipment	1,232	85		
22	Miscellaneous Manufactures	297	8	6,674	
23	Construction	20,663	6,710	2,158	
24	Wholesale and Retail Trade	183,282	28,935	63,058	
25	Transport Services	28,684	4,932	13,944	
26	Communication	1,093	1,211	9,181	
27	Electricity, Gas, Water	2,146	1,651	56,035	
28	Banking, Insurance, Real Estate	845,912	24,702	237,595	2
29	Other Services	338,530	10,656	182,358	
	Sub-total (Produced Inputs)	1,769,212	100,587	1,126,753	5
	Competitive Imports	60,025	8,648	45,268	
	Non-Competitive Imports	65,360	8,958	40,301	
30	Total Imports	125,385	17,606	85,569	
31	Indirect Taxes Less Subsidies	15,665	9,040	39,283	4
32	Depreciation	86,475	20,353	30,284	
33	Compensation of Employees	1,164,307	54,204	111,445	3
34	Profits	778,841	25,451	2,428,509	8
	Sub-total (Primary Inputs)	2,170,673	126,654	2,695,090	17
	Total Inputs	3,939,885	227,241	3,821,843	23

	Sector	1 Agri. Fishing Forestry	2 Mining	3 Food Manufactures	B
1	Agriculture, Fishing, Forestry	.01909	.01810	.07105	
2	Mining		.00432	.00037	
3	Food Manufactures	.04193		.05109	
4	Beverages				
5	Tobacco Products				
6	Textile Products	.00126		.00380	
7	Footwear				
8	Wood Products	.00047	.00030		
9	Furniture and Fixtures				
10	Paper and Paper Products	.00009	.00013	.00359	
11	Printed Materials		.00003		
12	Leather and Leather Products				
13	Rubber Products		.00004		
14	Chemicals	.01847	.00776	.00415	
15	Petroleum Products	.00572	.04971	.00693	
16	Non-Metallic Products		.00003	.00366	
17	Ferrous Metal Products		.00948	.00031	
18	Non-Ferrous Metal Products	.00004	.00006	.00047	
19	Non-Electrical Machinery	.00105	.00552		
20	Electrical Machinery	.00005			
21	Transport Equipment	.00031	.00037		
22	Miscellaneous Manufactures	.00008	.00004	.00175	
23	Construction	.00524	.02953	.00056	
24	Wholesale and Retail Trade	.04652	.12733	.01650	
25	Transport Services	.00728	.02170	.00365	
26	Communication	.00028	.00533	.00240	
27	Electricity, Gas, Water	.00054	.00727	.01466	
28	Banking, Insurance, Real Estate	.21470	.10870	.06217	
29	Other Services	.08592	.04689	.04771	
	Sub-total (Produced Inputs)	.44904	.44264	.29482	
	Competitive Imports	.01524	.03806	.01184	
	Non-Competitive Imports	.01659	.03942	.01055	
30	Total Imports	.03183	.07748	.02239	
31	Indirect Taxes Less Subsidies	.00398	.03978	.01028	
32	Depreciation	.02195	.08957	.00792	
33	Compensation of Employees	.29552	.23853	.02916	
34	Profits	.19768	.11200	.63543	
	Sub-total (Primary Inputs)	.55096	.55736	.70518	
	Total Inputs	1.00000	1.00000	1.00000	1

	Sector	1	2	
		Agri. Fishing Forestry	Mining	F M fa
1	Agriculture, Fishing, Forestry	.01909	.00104	.
2	Mining		.00432	.
3	Food Manufactures	.04322		.
4	Beverages			
5	Tobacco Products			
6	Textile Products	.00928		.
7	Footwear			
8	Wood Products	.00504	.00019	
9	Furniture and Fixtures			
10	Paper and Paper Products	.00171	.00015	.
11	Printed Materials	.00009	.00005	
12	Leather and Leather Products			
13	Rubber Products	.00005	.00005	.
14	Chemicals	.10067	.00244	.
15	Petroleum Products	.04963	.02490	.
16	Non-Metallic Products		.00003	.
17	Ferrous Metal Products		.01025	.
18	Non-Ferrous Metal Products	.00086	.00008	.
19	Non-Electrical Machinery	.01963	.00594	
20	Electrical Machinery	.00143		
21	Transport Equipment	.00666	.00046	
22	Miscellaneous Manufactures	.00247	.00007	.
23	Construction	.03948	.01282	.
24	Wholesale and Retail Trade	.08648	.01365	.
25	Transport Services	.01448	.00249	.
26	Communication	.02707	.03000	.
27	Electricity, Gas, Water	.00713	.00548	.
28	Banking, Insurance, Real Estate	.24691	.00721	.
29	Other Services	.23787	.00749	.
	Competitive Imports	.06125	.00882	.
	Non-Competitive Imports	.09657	.01323	.
30	Total Imports	.07568	.01063	.
31	Indirect Taxes less Subsidies	.01652	.00954	.
32	Depreciation	.06611	.01556	.
33	Compensation of Employees	.31678	.01475	.
34	Profits	.07140	.00230	.

	Sector	1 Agriculture Fishing Forestry	2 Mining	M
1	Agriculture, Fishing, Forestry	1.024379	.019996	
2	Mining	.000880	1.008983	
3	Food Manufactures	.047699	.002260	1
4	Beverages	.000337	.000189	
5	Tobacco Products	.000075	.000042	
6	Textile Products	.001793	.000193	
7	Footwear	.000299	.000231	
8	Wood Products	.002139	.001895	
9	Furniture and Fixtures	.000092	.000072	
10	Paper and Paper Products	.001111	.000749	
11	Printed Materials	.000028	.000061	
12	Leather and Leather Products	.000034	.000053	
13	Rubber Products	.000154	.000418	
14	Chemicals	.022564	.010192	
15	Petroleum Products	.007777	.053620	
16	Non-Metallic Products	.000855	.001174	
17	Ferrous Metal Products	.000175	.011635	
18	Non-Ferrous Metal Products	.000186	.000313	
19	Non-Electrical Machinery	.001114	.005700	
20	Electrical Machinery	.000107	.000204	
21	Transport Equipment	.000371	.000580	
22	Miscellaneous Manufactures	.000516	.000338	
23	Construction	.007529	.032453	
24	Wholesale and Retail Trade	.058159	.146399	
25	Transport Services	.009418	.025085	
26	Communication	.000742	.005624	
27	Electricity, Gas, Water	.002683	.009295	
28	Banking, Insurance, Real Estate	.237718	.137896	
29	Other Services	.094134	.052517	

The accounting system that describes the 1961 input-output framework may be shown by partitioning an inter-industry matrix into four parts:



Quadrant I comprises the final demand for goods and services of industries into which producing sectors are divided, broken down into *households* and *government* current expenditures, capital expenditures consisting of *capital formation, net inventory change,* and *exports.* Quadrant II records the inter industry transactions of the 29 producing industries. A row represents an industry's sales to the other industries, while a column contains the various purchases of an industry from other industries. The diagonal elements are outputs of an industry consumed within itself. Quadrant III contains, columnwise, the primary inputs broken down into the *import* content of the industry input, and the (gross) value added consisting of *compensation of employees, profits, rent, and interests payments* plus *depreciation,* and *indirect taxes less subsidies.* Quadrant IV consists of direct expenditures on primary inputs such as *government* and *household services.*

From Table I, note that in 1961, the volume of total transactions for the Philippine economy reached 41.25 billion pesos. This, in effect, sums up the individual level of transactions for each of the four quadrants making up the entire inter-industry matrix. The inter-industry sales and purchases (quadrant II) among and between the various industries themselves amounted to 6.39 billion pesos or 15.51% of the total volume of transactions. The disposition of industry output to final demand (quadrant I) amounted to 16.35 billion pesos or 39.64% of the entire transactions. Similarly, the sum of industry purchases of primary inputs (quadrant III) amounted to 16.35 billion

pesos. On the other hand, absorption of primary inputs by the final demand sector (quadrant IV) totaled 2.15 billion pesos or 5.21% of the total transactions for the period.

In terms of the disposition of total output, intermediate demand amounted to 22.75 billion pesos, 6.39 billion or 28.12% of which were for produced inputs while the rest (i.e. 16.35 billion or 71.88%) were for primary inputs. Final demand, on the other hand, amounted to 18.50 billion pesos, 16.35 billion or 88.38% of which represented absorption of produced inputs and 2.15 billion or 11.62% of which was the absorption of primary inputs.

3. **The Relationship Between GNP and Input-Output Accounts in 1961.** As systems of social accounting, both the GNP and input-output accounts record real transactions rather than financial flows. The latter are the subject of a flow of funds account. On the other hand, the GNP account of a country differs from its input-output account to the extent that the former account includes only final sales (output) while the latter account registers both intermediate and final sales. Some double-counting then is a deliberate feature of an output-input account, but this is totally absent in an internally consistent GNP account.

The relationship between the GNP and input-output accounts can be clarified in more formal terms. As mentioned earlier, except for intermediate sales which an input-output account includes but which a GNP account excludes, both accounts should reveal comparable national income figures. Once these intermediate purchases are eliminated both accounts are the same in virtually every respect.

The basic formulation used in the construction of the 1961 input-output table is the *balanced-budget* of each of the 29 producing industries, i.e. total input equals total output in each industry. Let

x_{ij} = the peso sales of industry i to industry j (*net* of import content — the input of the j-th industry purchased from the i-th industry),

m_{ij} = the import content (in pesos) in this (i, j) — transactions,

y_i = total final expenditures in the i-th industry,

v_j = (gross) value-added of the j-th industry.

Then

$$\text{Total input} = \sum_i x_{ik} + \sum_i m_{ik} + v_k$$

for an industry k, while

$$\text{Total output} = \sum_j x_{kj} + y_k$$

in the same industry k. Thus

$$\sum_i x_{ik} + \sum_i m_{ik} + v_k = \sum_j x_{kj} + y_k.$$

Summing up all industries,

$$\sum_k \sum_i x_{ik} + \sum_k \sum_i m_{ik} + \sum_k v_k = \sum_k \sum_j x_{kj} + \sum_k y_k.$$

Since, $$\sum_k \sum_i x_{ik} = \sum_k \sum_j x_{kj},$$

we have, after a little transposition,

$$\sum_k v_k = \sum y_k - \sum_k \sum_i m_{ik}.$$

Note that the inter-industry transactions in the second quadrant are cancelled out leaving only the summed quantities in the third and first quadrants. For most inter-industry models, the left side of the last equation represents the GNP while the right side of the last equation is the GNE so that we have now the basic national accounts identity.

In the succeeding formulation, however, the model followed has included the fourth quadrant in order to be consistent with our national aggregates. The modified model then includes the final expenditures on primary inputs. Let v' be the (gross)

value-added and m be the imports directly consumed so that $v' + m = y$, the total primary inputs directly purchased by the final demand sector. Then from the last equation we obtain

$$\sum_k v_k + v' + \sum_k \sum_i m_{ik} + m = \sum_k y_k + y$$

or

$$\sum_k v_k + v' = (\sum_k y_k + y) - (\sum_k \sum_i m_{ik} + m).$$

The left side of this last equation represents GNP (at market price) which is identical with the gross national expenditures (GNE) given at the right hand side. The following table describes both approaches.

TABLE 5. THE PHILIPPINE GNP ACCOUNT FOR 1961

A. VALUE-ADDED APPROACH (INCOME)

Item	*Current Pesos (Thousands)*	*Percent*
(1) Compensation of employees	₱ 3,675,467	21.82
(2) Profits, rents, interest	10,914,487	64.79
(3) Indirect taxes less subsidies	947,972	5.63
(4) Depreciation allowances	1,308,049	7.76
GNP (Market Price)	₱16,845,975	100.00

B. FINAL SALES APPROACH (EXPENDITURES)

Item	*Current Pesos (Thousands)*	*Percent*
(1) Household consumption expenditures	₱12,047,623	71.51
(2) Government current expenditures	1,529,317	9.08
(3) Expenditures on fixed assets	1,830,624	10.87
(4) Net increase in inventory	1,762,962	10.46
(5) Exports of goods and services	1,332,260	7.91
	₱18,502,786	109.83
(6) Less: Imports of goods and services	1,656,811	9.83
GNE	₱16,845,975	100.00

The above distribution is suggestive of the structure of the Philippine economy in the neighborhood of the year 1961. Note

that the figures measured here already include adjustments for *net factor income* from abroad.

The following table corresponds approximately to the current account of *Households and Private Non-Profit Institutions* in the national income accounts.

TABLE 6. PRIVATE APPROPRIATIONS ACCOUNT FOR 1961
(In Current Thousand Pesos)

Compensation of employees	P 3,675,467
Profits, rents, interest	10,914,487
Income of Private Sector	P14,589,954
Consumption expenditures	11,239,210
Net indirect taxes on household purchases	252,516
Personal and corporate income taxes	298,395
Direct imports	446,342
Domestic services	36,796
Depreciation allowances and losses	72,759
Total Current Expenditures	P12,346,018
Private Savings	2,243,936
Disposal of Income	P14,589,954

Thus, for the period in question, the total income of the private sector amounted to 14.6 billion pesos, 74.80% (10.9 billion) of which was generated out of profits, rents, and interest payments and the rest 25.2% from employee compensations. Out of this income, 84.61% (12.3 billion) was spent on consumption expenditures, taxes, imports, leaving a saving of 2.2 billion pesos (15.38%), net of *transfer payments* from other accounts and donations from abroad.

The following presents the current account of the government.

TABLE 7. GOVERNMENT CURRENT ACCOUNT FOR 1961
(In Current Thousand Pesos)

Net indirect taxes on:	
Inter-industry purchases	P 566,502
Capital outlays	122,207
Household purchases	252,516
Government current purchases	6,747

Personal income taxes	107,816
Corporate income taxes	190,579
Borrowings and transfers to current account	324,551
Current Revenue	₱ 1,570,918
Consumption of goods and services	₱ 726,984
Imports	75,080
Depreciation allowances	8,070
Indirect taxes on government current consumption	6,747
Compensation of employees	712,436
Government savings	41,601
Current Outlay	₱ 1,570,918

Current revenue of the government for 1961 amounted to 1.2 billion pesos: it is the sum of net indirect taxes and direct taxes paid by households and the business sectors. Total current expenditures for the same year amounted to 1.6 billion pesos. The deficit of 324,551 thousand pesos was covered by borrowings and transfers from other accounts.

TABLE 8. COMBINED CAPITAL ACCOUNT FOR 1961
(In Current Thousand Pesos)

Private Savings	₱ 2,243,936
Depreciation Allowances	1,308,049
Government Savings	41,601
Total Gross Savings	₱ 3,593,586
New Fixed Capital Formation	₱ 1,830,624
New Change in Stocks	1,762,962
Total Capital Outlay	₱ 3,593,586

TABLE 9. REST OF THE WORLD ACCOUNT FOR 1961
(In Current Thousand Pesos)

Exports of goods and services	₱ 1,312,294
Re-exports	19,966
Current Receipts	₱ 1,332,260
Intermediate imports	719,870
Final imports	936,941
Total imports	₱ 1,656,811
Net lending to the Philippines and other transfers from abroad	324,511
Current Payments	₱ 1,332,260

Observe that the total imports of some 1.7 billion pesos were distributed between the intermediate consumption of the producing sectors and the final consumption of households, capital goods, and government.

An accounting of the gross national income or value-added together with their percentage shares is given in the next table.

TABLE 10. DISTRIBUTION OF GROSS VALUE-ADDED BY INDUSTRIAL ORIGIN FOR 1961

Industry	*Value-Added (Current P1000)*	*Percentage Share*
Agriculture, Fishing, Forestry	P 2,045,288	12.14%
Mining	109,048	.65
Manufacturing	4,692,940	27.86
Construction	291,659	1.73
Electricity, Gas, Water	201,098	1.19
Trade, Wholesale and Retail	2,063,493	12.25
Banking, Insurance, Real Estate	3,317,293	19.69
Transport and Communication	1,697,405	10.08
Other Services	2,427,751	14.41
Gross National Product (at current market price)	P16,845,975	100.00%

A further collapsing of the above Table 10 yields the following distribution:

	Value-Added	*Share*
Manufacturing	4,692,940	27.86
Services	9,998,699	59.35
Agriculture, Fishing, Forestry, and Mining	P2,154,288	12.79
T o t a l s	P16,845,975	100.00%

Obviously, the structure of economic production in the Philippines continues to be biased towards the service industries, though manufacturers have become a notable part. The relatively small contribution of agriculture, fishing, forestry and mining to the gross value-added simply confirms the subsistence type of primary production that prevails in the country, to the extent that a very high proportion of the national labor

force is commonly known to be tied up with this line of production.

4. **The Structure of Primary Inputs.** The relatively small proportion of the GNP attributed to wages reflects the following factors:

(a) the prevalence of subsistence wages;

(b) the relative absence of aggresive labor unionism;

(c) the generally low wage expectation due to stable prices of commodities. The distribution of industries in terms of magnitude of relative shares in the national wage income for 1961 is given in the following:

TABLE 11. INDUSTRIAL STRUCTURE OF WAGE INCOME

Sectors	*Value of Wage Income (₱1,000)*	*Share in Total Wage Income*	*Ranking*
Agriculture, Fishing, and Forestry	₱ 1,164,307	31.68%	1
Other Services	498,193	13.55	3
Government	712,436	19.38	2
Wholesale and Retail Trade	268,913	7.32	4
Transport Services	168,885	4.60	5
Food Manufactures	111,445	3.03	6
Banking, Insurance, Real Estate	80,883	2.20	7
Mining	54,204	1.47	8
Textiles	49,523	1.35	9
Wood products	49,495	1.35	9
Chemicals	48,075	1.31	10
Electricity, Gas, and Water	40,123	1.09	11
Households and Private Non-Profit Institutions	36,796	1.00	12
Sub-total	₱ 3,283,278	89.33%	
Other Sectors	392,189	10.67	
All Sectors	₱ 3,675,467	100.00%	
Agriculture, Fishing, Forestry, and Mining	₱ 1,218,511	33.15%	2
Manufactures	562,950	15.32	3
Services	1,894,006	51.53	1
All Sectors	₱ 3,675,467	100.00%	

Thus, of the total payments to labor, primary production accounts for a third, service a half, and manufacturers the rest. Such a configuration merely confirms the stage of underdevelopment of the Philippine economy in terms of a fairly limited range of secondary production and a disproportionate bias towards primary and tertiary lines of production. This distribution is, to a certain extent, also indicative of the type of agriculture that generally prevails in the Philippines.

An alternative approach to compensation of employees is to consider it as a cost outlay, that is, a wage bill in payment for purchases of labor units as a primary input to production. This tells, to some extent, on the factor bias of certain industries, that is to say, whether they are labor-biased or capital biased in production. While it may not be a rigorous way of testing factor bias, because the latter usually measures primary inputs in physical terms as so many man-hours and so many units of capital inputs per unit of a physical output, it is still useful to pursue the analysis of compensation of employees as a cost outlay, if only to clarify further the structrue of the economy in this aspect for the period in question.

The following tables 12 and 13 show respectively the distribution of industries in terms of the size of the wage cost as a fraction of industry cost and the percentage distribution of employment and compensation of employees in the major Philippine industry groups in 1961. The former reveals that primary production in the country appears to be labor-biased relative to the tertiary and secondary lines of production and that tertiary production is labor-biased in terms of the secondary lines of production to the extent that wage cost ratios suggest directions of factor intensities. To some extent the table betrays the type of manufacturing that prevails in the Philippines, which is mostly of the finishing type that requires substantial outlays on raw materials (working capital) largely imported. The latter table tells us that primary production absorbed half of the total employed labor at the time and the service industries a little more than a third. Considering the

percentage distribution of the number of paid workers and compensation of employees, one can also infer from this something of the type of labor skills that each of the three major industries put to their employ. The service industries which employed only 3.47% of the labor force in 1961 accounted for 39.12% of the wage income for that period, while primary industries which employed 51.56% of the labor force contributed only 41.64% of the wage income. Manufactures which employed 13.74% of the labor accounted for 19.24% of the wage income. In terms of the structure of labor skills, it appears that the service industries employed the most skilled type of labor available at the time, manufacturing the semi-skilled labor, and the primary industries the most unskilled or undifferentiated labor.

Table 12. INDUSTRIAL STRUCTURE OF WAGE COST OVER INDUSTRY COST

	Wage Cost (in ₱1000)	*Industry Cost* (in ₱1000)	*Wage Cost/ Industry Cost* (in percent)	*Ranking*
Communication	P 21,701	P 40,370	53.75%	1
Other Services	498,193	1,423,147	35.00	2
Agriculture, Forestry, and Fishing	1,164,307	3,939,885	29.55	3
Mining	54,204	227,241	23.85	4
Printed Materials	32,559	145,718	22.34	5
Footwear	33,736	216,688	15.57	6
Non-ferrous Metals	26,190	178,804	14.65	7
Beverages	32,960	234,865	14.03	8
Transport Equipment	24,838	184,880	13.43	9
Wood Products	49,495	369,232	13.40	10
Electricity, Gas, Water	40,123	301,131	13.32	11
Wholesale and Retail	268,913	2,119,396	12.69	12
Construction	66,076	523,442	12.62	13
Non-metallic Products	23,183	216,108	10.73	14
Non-electrical Mach.	21,957	211,129	10.40	15
Electrical Machinery	13,656	138,994	9.82	16
Rubber Products	15,198	161,754	9.39	17
Misc. Manufactures	11,176	120,427	9.28	18
Textile Products	49,523	535,586	9.25	19
Transport Services	168,885	1,981,331	8.52	20
Leather Products	3,177	39,508	8.04	21
Furniture and Fixtures	9,770	131,151	7.45	22
Paper Products	13,901	200,289	6.94	23
Chemicals	48,075	722,791	6.65	24
Ferrous Metals	13,503	210,292	6.42	25
Tobacco Products	23,107	475,630	4.86	26
Food Manufactures	111,445	3,821,843	2.92	27

Banking, Insurance, and Real Estate	80,883	3,426,006	2.36	28
Petroleum Products	5,501	453,621	1.21	29
	P 2,926,235	P22,751,259	12.86%	
Agriculture, Fishing Forestry, and Mining	P 1,218,511	P 4,167,126	29.24%	1
Services	1,144,774	9,814,823	11.66	2
Manufactures	5,62,950	8,769,310	6.42	3
	P 2,926,235	P22,751,259	12.86%	

Table 13. STRUCTURE OF EMPLOYMENT AND COMPENSATION

Industry Groups	Number of Paid Workers[1]		Compensation of Employees	
	Number (in 1000)	Percentage Distribution	Value (1000 pesos)	Percentage Distribution
Agriculture, Forestry, and Fishing	3,726	51.09%	P1,164,307	39.79%
Mining	34	0.47	54,204	1.85
Food Manufactures	242	3.32	111,445	3.81
Beverages	30	0.42	32,960	1.13
Tobacco	37	0.51	23,107	0.79
Textile Products	89	1.22	49,523	1.69
Footwear	166	2.28	33,736	1.15
Wood Products	90	1.23	49,495	1.69
Furniture and Fixtures	25	0.34	9,770	0.33
Paper Products	16	0.22	13,901	0.48
Printed Materials	40	0.55	32,559	1.11
Leather Products	7	0.10	3,177	0.11
Rubber Products	19	0.26	15,198	0.52
Chemicals	44	0.60	48,075	1.64
Petroleum Products	3	0.04	5,501	0.19
Non-metallic Products	34	0.47	23,183	0.79
Ferrous Metal Products	16	0.22	13,503	0.46
Non-ferrous Metal Products	39	0.53	26,190	0.89
Non-electrical Machinery	28	0.38	21,957	0.75
Electrical Machinery	22	0.30	13,656	0.47
Transport Equipment	30	0.41	24,838	0.85
Misc. Manufactures	25	0.34	11,176	0.38
Construction	272	3.73	66,076	2.26
Wholesale and Retail Trade	788	10.81	268,913	9.19
Transport Services and Communication	304	4.17	190,586	6.51
Electricity, Gas, Water	22	0.30	40,123	1.38
Other Services[2]	1,049	14.39	498,193	17.03
Industries Unreported[3]	96	1.30	80,883	2.76
Totals	7,293	100.00%	P2,926,235	100.00%

[1] Excludes 2,283,000 unpaid family workers out of 9,576,00 labor force.
[2] Includes government, community, domestic, recreational, etc. services.
[3] Includes among others banking, insurance, and real estate.

Agriculture, Fishing, Forestry, and Mining	3,760	51.56%	P1,218,511	41.64%
Services	2,531	34.70	1,144.774	39.12
Manufactures	1,002	13.74	562,950	19.24
Totals	7,293	100.00%	P2,926,235	100.00%

In 1961, profits, rents, and interest payments amounted to 10.9 billion pesos or 69.79% of the GNP. Their sectoral distribution and the distribution of their magnitudes compared to industrial output is presented in the following tables:

Table 14. INDUSTRIAL STRUCTURE OF PROFITS, RENTS, AND INTEREST

Sectors	*Share* (in percent)	*Total Value* (in P1000)
Banking, Insurance, Real Estate	29.59%	P 3,299,719
Food Manufactures	22.25	2,428,509
Trade, Wholesale and Retail	16.11	1,757,825
Transport Services	7.69	838,893
Agriculture, Forestry, Fishing	7.14	778,841
Other Services (business, personal, etc.)	6.24	681,029
Petroleum Products	1.62	177,198
Textile Products	1.44	157,465
Electricity, Gas, Water	1.31	143,112
Chemicals	1.19	129,806
Sub-total	94.58%	P10,322,397
All Other Sectors	5.42	592.090
Total	100.00%	P10,914,847
Aggregated Sectors		
Agriculture, Forestry, Fishing, Mining	7.37%	P 804,292
Manufactures	31.34	3,421,438
Services	61.29	6,688,757
Total	100.00%	P10,914,847

Table 15. INDUSTRIAL PROFITS, RENTS, AND INTEREST PER OUTPUT

Sectors	*Profits Rents, Interest* (in ₱1000)	*Total Industry Output* (in ₱1000)	*Profits/Output Ratio* (in %)
Banking, Insurance, Real Estate	P3,229,719	P3,426,006	94.27%
Trade, Wholesale & Retail	1,757,825	2,119,396	82.95
Food Manufactures	2,428,509	3,821,843	63.54
Furniture and Fixtures	75,658	131,151	57.68
Other Services	681,029	1,423,147	47.85
Electricity, Gas & Water	143,112	301,131	47.52
Transport Services	838,893	1,981,331	42.34
Petroleum Products	177,198	453,621	39.06
Beverages	89,134	234,865	37.95
Rubber Products	50,972	161,754	31.51
Textile Products	157,465	535,586	29.40
Agriculture, Forestry and Fishing	778,841	3,939,885	19.77
Tobacco	86,347	475,630	18.15
Chemicals	129,806	722,791	17.96
Printed Materials	25,452	145,718	17.47
Wood Products	61,497	369,232	16.65
Non-Metallic Products	33,076	216,108	15.30
Footwear	30,132	216,688	13.91
Mining	25,451	227,241	11.20
Non-Ferrous Metal Products	17,880	178.804	10.00
Electrical Machinery	11,338	138,994	8.15
Construction	35,490	523,442	6.78
Leather and Leather Products	2,696	39,508	6.82
Communication	2,689	40,370	6.66
Non-Electrical Machinery	12,554	211,129	5.94
Paper and Paper Products	10,999	200,289	5.49
Ferrous Metal Products	10,394	210,292	4.94
Transport Equipment	9,034	184,880	4.88
Miscellaneous Manufactures	1,302	120,427	1.08
Aggregated Sectors			
Agriculture, Forestry, Fishing and Mining	P 804,292	P4,167,126	19.30%
Manufactures	3,421,438	8,769,310	39.01
Services	6,688,757	9,814,823	68.15

Generally, the sectoral contribution to the national profits, rents, and interest income is an economist's measure of the utility of the sector to the national economy in terms of its social marginal productively. Table 14 confirms this.

For the period under consideration, indirect taxes less subsidies contributed 5.63% to the GNP (approximately 948 million pesos). Indirect taxes include local commodity taxes and import duties. The estimation of subsidies, however, does not include commodity taxes waived by the government as part of its broad program of incentives to stimulate manufacturing activities, but includes losses of semi-public corporation and the more conventional form of subsidy in terms of outright cash grants.

The size of the tax base or tax liability for indirect taxation depends on the extent to which the marketable surplus of commodities enters the monetized sector of the economy especially if taxes are ad valorem rather than specific. This is a rather important consideration to take into account in an underdeveloped economy characterized by a certain degree of economic dualism, in which the bulk of the money supply circulates within a fairly delimited modern sector, while the subsistence agricultural sector continues to include significant trading on a barter basis or where vendible surpluses are simply doled out for free on purely non-economic considerations.

One could argue that if much of the labor force and a notable portion of the national output are related to agriculture of a subsistence type, the taxable base for indirect taxation is already from the start very limited, since this form of taxation depends on the marketable surplus of produce. Some evidence of this is shown in the following table describing the relative shares of major sectors of the economy to the total net indirect taxes collected in 1961.

Table 16. AGGREGATED SHARES IN THE TOTAL INDIRECT TAXES

Aggregated Sectors	*Share* (in percent)	*Total Net Indirect Taxes* (in ₱1000)
Agriculture, forestry, fishing, and mining	2.61%	₱ 24,705
Manufactures	57.15	541,797
Household	26.64	252,516
Government	0.71	6,747
Fixed capital formation	7.46	70,678
Net Inventory change	5.43	51,529
Total Net Indirect Taxes	100.00%	₱947,972

For getting an idea of the regressivity of the tax structure insofar as indirect taxes are concerned in that year, the following table may prove useful:

Table 17. INDUSTRIAL CONTRIBUTIONS TO THE TOTAL INDIRECT TAXES LESS SUBSIDIES

Sector	*Share* (in percent)	*Total Net Indirect Taxes* (in ₱1000)
Households	26.64%	₱ 252,516
Tobacco products	15.48	146,737
Petroleum products	9.94	94,256
Fixed capital formation	7.46	70,678
Net inventory change	5.44	51,529
Beverages	4.28	40,596
Food manufactures	4.14	39,283
Transport equipment	3.86	36,563
Chemicals	3.23	30,604
Non-electrical machinery	2.83	26,799
Ferrous metal products	2.41	22,832
Textile products	2.39	22,662
Paper products	1.79	17,028
Agriculture, fishing, forestry	1.65	15,665
Non-ferrous metal products	1.62	15,377
Electrical machinery	1.54	14,629
Mining	0.96	9,040
Non-metallic products	0.87	8,195
Miscellaneous manufactures	0.72	6,861
Government	0.71	6,747
Rubber products	0.52	4,961
Footwear	0.37	3,513
Wood products	0.35	3,353
Furniture and fixtures	0.33	3,147
Leather products	0.24	2,209
Printed materials	0.23	2,192
Total Net Indirect Taxes	100.00%	₱ 947,972

Thus, the single largest percentage contribution to net indirect tax revenues in 1961 was generated by the household sector. Whether this implies that indirect taxes is regressive or not depends on the income distribution for that period and on the type of commodities which account for the major portion of household expenditures. Available evidence shows that in 1961 of the 4.4 million families in the Philippines, 76.1% were low income households, i.e. having at most annual family income of 2,400 pesos. The distribution of family expenditures at the same time was biased towards purchases, actual and imputed, of agricultural and fishing products (18.29%) and of food manufactures (23.26%) which together amounted to 41.55% of household expenditures. On this basis, with some qualifications, indirect taxes in the Philippines in 1961 may be described as rather regressive.

As a percent of industry cost, the distribution of indirect taxes less subsidies is given by the following:

Table 18. NET INDIRECT TAXES VERSUS INDUSTRY COST

Sectors	*Ratio of Taxes to Cost* (in percent)	*Value of Net Indirect Taxes* (in P1000)	*Value of Total Industry Cost* (in P1000)
Tobacco Products	30.85%	P 146,737	P 475,630
Petroleum Products	20.78	94,256	453,621
Transport Equipment	19.78	36,563	184,880
Beverages	17.28	40,596	234,865
Non-electrical Machinery	12.69	26,799	211,129
Ferrous Metal Products	10.86	22,832	210,292
Electrical Machinery	10.52	14,629	138,994
Non-ferrous Metal Products	8.60	15,377	178,804
Paper and Paper Products	8.50	17,028	200,289
Miscellaneous Manufactures	5.70	6,861	120,427
Leather Products	5.59	2,209	39,508
Chemicals	4.23	30,604	722,791
Textile Products	4.23	22,662	535,586
Mining	3.98	9,040	227,241
Fixed Capital Formation	3.86	70,678	1,830,624
Non-metallic Products	3.79	8,195	216,108
Rubber Products	3.07	4,961	161,754
Net Inventory Change	2.92	51,529	1,762,962

Furniture and Fixtures	2.40	3,147	131,151
Households	2.10	252,516	12,047,623
Footwear	1.62	3,513	216,688
Printed Materials	1.50	2,192	145,718
Food Manufactures	1.03	39,283	3,821,843
Wood Products	0.91	3,353	369,232
Government	0.44	6,747	1,529,317
Agriculture, Forestry, Fishing	0.39	15,665	3,939,885

Depreciation allowances in 1961 amounted to 1.3 billion pesos representing 7.76 percent of the Gross National Product. Its structural characteristics are compactly exhibited in the following two tables:

Table 19. DEPRECIATION VERSUS INDUSTRY COST

Sectors	*Depreciation/ Industry Cost Ratio (in %)*	*Value of Depreciation (in P1000)*	*Value of Total Industry Cost (in P1000)*
Construction	36.31%	P 190,093	P 523,442
Transport Services	33.35	660,757	1,981,331
Communication	11.10	4,480	40,370
Mining	8.96	20,353	227,241
Electricity, Gas, Water	5.93	17,863	301,131
Wood Products	5.08	18,757	369,232
Non-metallic Products	4.87	10,532	216,108
Printed Materials	3.77	5,489	145,718
Textile Products	3.63	19,467	535,586
Footwear	3.51	7,599	216,688
Electrical Machinery	3.29	4,580	138,994
Beverages	3.25	7,632	234,865
Transport Equipment	3.02	5,585	184,880
Paper and Paper Products	2.76	5,522	200,289
Rubber Products	2.69	4,355	161,754
Other Services	2.60	36,998	1,423,147
Petroleum Products	2.57	11,656	453,621
Miscellaneous Manufactures	2.40	2,886	120,457
Non-ferrous Metal Products	2.23	3,996	178,804
Ferrous Metal Products	2.20	4,621	210,292
Agriculture, Fishing, Forestry	2.19	86,475	3,939,885
Chemicals	1.92	13,885	722,791
Leather and Leather Products	1.75	691	39,508
Trade, Wholesale and Retail	1.73	36,755	2,119,396
Furniture and Fixtures	1.33	1,747	131,151
Non-electrical Machinery	1.28	2,710	211,129
Tobacco Products	1.00	4,761	475,630
Food Manufactures	0.80	30,284	3,821,843
Banking, Insurance, Real Estate	0.20	6,691	3,426,006

Table 20. INDUSTRIAL CONTRIBUTIONS TO THE TOTAL DEPRECIATION BILL

Sector	*Percent Share in Total Depreciation*	*Total Depreciation (in ₱1000)*
Transport services	50I.51%	₱ 660,757
Construction	14.53	190·093
Agriculture, fishing, forestry	6.61	86,475
Other services	2.83	36,998
Trade, wholesale and retail	2.81	36,755
Food manufactures	2.32	30,284
Mining	1.56	20,353
Textile products	1.49	19,467
Wood products	1.44	18,757
Electricity, gas, water	1.37	17,863
Chemicals	1.06	13,885
Petroleum products	0·89	11,656
Non-metallic products	0.81	10,532
Beverages	0.58	7,632
Footwear	0.58	7,599
Banking, insurance, real estate	0.51	6,691
Transport equipment	0.43	5,585
Paper products	0.42	5,522
Printed materials	0.42	5,489
Tobacco products	0.36	4,761
Ferrous metal products	0.35	4,621
Electrical machinery	0.35	4,580
Communication	0.34	4,480
Rubber products	0.33	4,355
Non-ferrous metal products	0.31	3,996
Other manufactures	0.22	2,886
Non-electrical machinery	0.21	2,710
Furniture and fixtures	0.13	1,747
Leather products	0.05	691
Subtotal	93.82%	₱1,227,220
Households	5.56	72,759
Government	0·62	8.070
Total	100.00%	₱1,308,049

5. **The Structures of Final Expenditures for 1961.** Recall that household expenditures represent besides personal consumption also non-personal or institutional consumption of such entities as private, non-profit groups, e. g. charitable asylums and hospitals. The proportion of these expenditures to the gross national product, viz. 71.51%, can be interpreted as the average propensity to consume of the entire Philippine population for the year 1961.

Four tables concerning these expenditures will be presented. Table 21 will simply give the distribution of household expenditures. Table 22 classifies in broader categories the types of goods Philippine households bought in the year 1961. In the last two tables, Tables 23 and 24, interest is focused on the relative importance of these purchases in the total sales of each industry or sector. One of these suggests, to some extent, which industries can be more or less considered consumer goods or capital goods industries, depending on whether the bulk of sales go into consumption or into capital formation. For example in Table 23 we see that furniture and fixtures, tobacco, beverages, transport services, food, and footwear are relatively more consumer goods (insofar as more than 60% of their total output or sales terminate in consumption). Table 24, on the other hand, distribute sales to households on the basis of the structure of economic production, i.e. whether they are an output of primary, secondary, or tertiary lines of production.

Table 21. DISTRIBUTION OF HOUSEHOLD EXPENDITURES

Sector	*Industry Purchases as Percent of Total Household Expenditures*	*Value of Household Expenditures* (in ₱1000)
Food manufactures	23.26%	₱ 2,802,317
Agriculture and fishing	18.29	2,203,319
Transport services	12.22	1,472,582
Banking, insurance, real estate	8.26	994,774
Trade, wholesale and retail	6.73	810,324
Other services (health, education)	4.67	563,081
Tobacco products	3.71	446,763
Imports	3.70	446,342
Chemicals	3.09	372,779
Textile products	2.28	274,934
Indirect taxes	2.10	252,516
Beverages	1.72	207,012
Construction	1.62	195,542
Footwear	1.26	151,647
Furniture and fixtures	1·03	124,371
Wood products	0.94	113,545
Petroleum products	0.79	95,052
Depreciation (cars, etc.)	0.60	72,759
Electricity, gas, water	0.60	72,314
Paper products	0.52	62,655
Rubber products	0.45	54,226
Printed materials	0.44	52,949
Electrical machinery	0.38	46,153

Sector	*Industry Purchases as Percent of Total Household Expenditures*	*Value of Household Expenditures* (in P1000)
Non-metallic products	0.34	40,971
Transport equipment	0.33	39,097
Domestic services (maids)	0.31	36,796
Communication	0.11	13,008
Non-ferrous metal products	0.09	11,099
Miscellaneous manufactures	0.08	9,576
Non-electrical machinery	0.07	8,382
Leather products	0.01	738
	100.00%	P12,047,623

Table 22. MAJOR SECTORAL DISTRIBUTION OF HOUSEHOLD EXPENDITURES

Major Sectors	*Industry Purchases as Percent of Total Household Expenditures*	*Value of Household Expenditures* (in P1000)
Manufactures	40.79%	P 4,914,266
Services	34.21	4,121,625
Agriculture and fishing	18.29	2,203,319
Imports	3.70	446,342
Indirect taxes	2.10	252,516
Depreciation (cars, etc.)	0.60	72 759
Domestic services	0.31	36,796
T o t a l	100.00%	P12,047,623

Table 23. SALES TO HOUSEHOLDS VERSUS INDUSTRY SALES

Sectors	*Household/Industry Sales Ratio* (in percent)	*Value of Household Sales* (in P1000)	*Value of Total Industry Output* (in P1000)
Furniture and Fixtures	94.83%	P 124,371	P 131,151
Tobacco Products	93.93	446,763	475,630
Beverages	88.14	207,012	234,865
Transport Services	74.32	1,472,582	1,981,331
Food Manufactures	73.32	2,802,317	3,821,843
Footwear	69.98	151,647	216,688
Agriculture, Forestry, Fishing	55.92	2,203,319	3,939,885
Chemicals	51.57	372,779	722,791
Textile Products	51.33	274,934	535,586
Other Services (Health, Education, etc.)	39.57	563,081	1,423,147
Trade, Wholesale and Retail	38.23	810,324	2,119,396
Construction	37.36	195,542	523,442
Printed Materials	36.34	52,949	145,718

Sector	*Household/Industry Sales Ratio* (in percent)	*Value of Household Sales* (in P1000)	*Value of Total Industry Output* (in P1000)
Rubber Products	33.52%	54,226	161,754
Electrical Machinery	33.21	46,153	138,994
Communication	32.22	13,008	40,370
Paper and Paper Products	31.28	62,655	200,289
Wood Products	30.75	113,545	369,232
Banking, Insurance, Real Estate	29.04	994,774	3,426,006
Imports	26.94	446,342	1,656,811
Indirect Taxes	26.64	252,516	947,972
Electricity, Gas, Water	24.01	72,314	301,131
Transport Equipment	21.15	39,097	184,880
Petroleum Products	20.95	95,052	453,621
Non-metallic Products	18.96	40,971	216,108
Miscellaneous Manufactures	7.95	9,576	120,427
Non-ferrous Metal Products	6.21	11,099	178,804
Depreciation	5.56	72,759	1,308,049
Non-electrical Machinery	3.97	8,382	211,129
Leather and Leather Products	1.87	738	39,508
Domestic Sales (Maids)	1.00	36,796	3,675,467

Table 24. RATIOS OF HOUSEHOLD TO TOTAL SALES OF AGGREGATED INDUSTRIES

Manufactures	56.04%	P4,914,266	P8,769,310
Agriculture, Forestry, Fishing, Mining	52.87	2,203,319	4,167,126
Services	41.99	4,121,625	9,814,823
Imports	26.94	446,342	1,656,811
Indirect Taxes	26.64	252,516	947,972
Depreciation (Cars, etc.)	5.56	72,759	1,308,049
Domestic Services (Maids)	1.00	36,796	3,675,467

Government expenditures excluding new construction and comparable outlays amounted to 1.53 billion pesos or 9.08% of final expenditures of the Philippine economy in 1961. The industrial distribution of government expenditures are presented in Tables 25 and 26. Tables 27 and 28 contrasts government purchases with industry sales in the same year.

Table 25. INDUSTRIAL DISTRIBUTION OF GOVERNMENT EXPENDITURES

Sectors	*Ratio of Purchases to Expenditures* (in percent)	*Value of Expenditures* (in ₱1000)
Compensation of Employees	46.58%	₱ 712,436
Wood Products	6.31	96,490
Electricity, Gas and Water	5.72	87,427
Printed Materials	5.46	83,450
Imports	4.91	75,080
Banking, Insurance, Real Estate	4.53	69,216
Construction	4.48	68,592
Miscellaneous Manufactures	3.74	59,261
Other Services	3.26	49,857
Non-Metallic Products	3.07	47,011
Agriculture, Forestry and Fishing	2.39	36,500
Transport Equipment	2.28	34,846
Transport Services	2.07	31,595
Trade, Wholesale and Retail	1.91	29,185
Non-Ferrous Metal Products	0.79	12,105
Petroleum Products	0.73	11,177
Depreciation	0.53	8,070
Indirect Taxes	0.44	6,747
Paper and Paper Products	0.25	3,905
Non-Electrical Machinery	0.16	2,457
Communication	0.16	2,395
Chemicals	0.11	1,772
Rubber Products	0.06	973
Electrical Machinery	0.05	717
Food Manufactures	0.00	35
Footwear	0.00	18
	100.00%	₱1,529,317

Table 26. AGGREGATED DISTRIBUTION OF GOVERNMENT EXPENDITURES

Compensation of Employees	46.58%	₱ 712,436
Manufactures	23.03	352,217
Services	22.12	338,267
Imports	4.91	75,080
Agriculture, Forestry, Fishing, Mining	2.39	36,500
Depreciation	0.53	8,070
Indirect Taxes	0.44	6,747
	100.00%	₱1,529,317

Table 27. GOVERNMENT PURCHASES VERSUS TOTAL INDUSTRIAL SALES

Sectors	*Value of Govt. Purchases* (in ₱1000)	*Value of Total Industry Sales* (in ₱1000)	*Purchases/ Sales Ratio* (in percent)
Printed Materials	₱ 83,450	₱ 145,718	57.27%
Miscellaneous Manufactures	57,261	120,427	47.55
Electricity, Gas, Water	87,427	301,131	29.03
Wood Products	96,490	369,232	26.13
Non-metallic Products	47,011	216,108	21.75
Compensation of Employees	712,436	3,675,467	19.38
Transport Equipment	34,846	184,880	18.85
Construction	68,592	523,442	13.10
Non-ferrous Metal Products	12,105	178,804	6.77
Communication	2,395	40,370	5.93
Imports	75,080	1,656,811	4.53
Other Services	49,857	1,423,147	3.50
Petroleum Products	11,177	453,621	2.46
Banking, Insurance, Real Estate	69,216	3,426,006	2.02
Paper and Paper Products	3,905	200,289	1.95
Transport Services	31,595	1,981,331	1.59
Trade, Wholesale and Retail	29,185	2,119,396	1.38
Non-electrical Machinery	2,457	211,129	1.16
Agriculture, Fishing, Forestry	36,500	3,939,885	0.93
Indirect Taxes	6,747	947,972	0.71
Depreciation	8,070	1,308,049	0.62
Rubber Products	973	161,754	0.60
Electrical Machinery	717	138,994	0.52
Chemicals	1,772	722,791	0.25
Footwear	18	216,688	0.01
Food Manufactures	35	3,821,843	0.00

Table 28. GOVERNMENT PURCHASES VERSUS TOTAL AGGREGATED INDUSTRIAL SALES

Compensation of Employees	₱712,436	₱3,675,467	19.38%
Imports	75,080	1,656,811	4.53
Manufactures	352,217	8,769,310	4.02
Services	338,267	9,814,823	3.45
Agriculture, Forestry, Fishing, Mining	36,500	4,167,126	0.87
Indirect Taxes	6,747	947,977	0.71
Depreciation	8,070	1,308,049	0.62

In 1961, purchases of new fixed assets amounted to 10.8% of the gross national expenditures, i.e. 1.83 billion pesos. A distribution of these purchases as a fraction of the total sales made out by each industry is presented in Tables 29 and 30. On the other hand, Tables 31 and 32 show the distribution of purchases of new fixed assets by industry and major lines of production.

Table 29. NEW FIXED ASSETS VERSUS TOTAL INDUSTRY SALES

Sectors	*Value of New Fixed Assets* (in ₱1000)	*Value of Industry Sales* (in ₱1000)	*Assets Purchases over Industry Sales* (in percent)
Non-electrical Machinery	₱172,514	₱ 211,129	81.71%
Non-ferrous Metal Products	98,753	178,804	55.23
Transport Equipment	90,863	184,880	49.15
Electrical Machinery	56,438	138,994	40.60
Non-metallic Products	45,719	216,108	21.16
Ferrous Metal Products	43,817	210,292	20.84
Petroleum Products	77,645	453,621	17.12
Imports	271,484	1,656,811	16.38
Construction	76,469	523,442	14.61
Trade, Wholesale and Retail	208,682	2,119,396	9.85
Rubber Products	14,885	161,754	9.20
Transport Services	177,287	1,981,331	8.95
Communication	3,393	40,370	8.40
Indirect Taxes	70,678	947,972	7.45
Textile Products	36,225	535,586	6.76
Beverages	12,112	234,865	5.16
Banking, Insurance, Real Estate	174,989	3,426,006	5.11
Mining	7,318	227,241	3.22
Wood Products	10,648	369,232	2.88
Agriculture, Fishing, Forestry	100,766	3,939,885	2.56
Chemicals	16,433	722,791	2.27
Paper and Paper Products	4,262	200,289	2.13
Miscellaneous Manufactures	2,561	120,427	2.12
Electricity, Gas, Water	6,082	301,131	2.02
Printed Materials	2,904	145,718	1.99
Footwear	2,630	216,688	1.21
Leather and Leather Products	387	39,508	0.98
Tobacco Products	4,235	475,630	0.89
Food Manufactures	30,124	3,821,843	0.79
Other Services	10.044	1,423,147	0.71
Furniture and Fixtures	277	131,151	0.21

Table 30. NEW FIXED ASSETS VERSUS TOTAL SALES OF MAJOR INDUSTRIES

Sectors	*Value of New Fixed Assets* (in ₱1000)	*Value of Industry Sales* (in ₱1000)	*Assets Purchases/ Industry Sales* (in percent)
Imports	₱ 271,484	₱1,656,811	16.38%
Manufactures	723,432	8,769,310	8.25
Indirect Taxes	70,678	947,972	7.45
Services	656,946	9,814,823	6.69
Agriculture, Forestry, Fishing, Mining	108,084	4,167,126	2.59

Table 31. DISTRIBUTION OF EXPENDITURES ON NEW FIXED ASSETS

Sectors	*Purchases over Expenditures* (in percent)	*Total Expenditures on New Fixed Assets* (in ₱1000)
Imports	14.83%	₱ 271,484
Trade, Wholesale and Retail	11.40	208,682
Transport Services	9.68	177,287
Banking, Insurance, Real Estate	9.56	174,989
Non-electrical Machinery	9.42	172,514
Agriculture, Forestry, Fishing	5.55	100,766
Non-ferrous Metal Products	5.39	98,753
Transport Equipment	4.96	90,863
Petroleum Products	4.24	77,645
Construction	4.18	76,469
Indirect Taxes	3.86	70,678
Electrical Machinery	3.08	56,438
Non-metallic Products	2.50	45,719
Ferrous Metal Products	2.39	43,817
Textile Products	1.98	36,225
Food Manufactures	1.64	30,124
Chemicals	0.90	16,433
Rubber Products	0.81	14,885
Beverages	0.66	12,112
Wood Products	0.58	10,648
Other Services	0.54	10,044
Mining	0.40	7,318
Electricity, Gas, Water	0.33	6,082
Paper and Paper Products	0.23	4,262
Tobacco Products	0.23	4,235
Communication	0.19	3,393
Printed Materials	0.16	2,904
Footwear	0.14	2,630
Miscellaneous Manufactures	0.14	2,561
Leather and Leather Products	0.02	387
Furniture and Fixtures	0.01	277
	100.00%	₱1,830,624

Table 32. AGGREGATED DISTRIBUTION OF EXPENDITURES ON NEW FIXED ASSETS

Aggregated Sectors	*Purchases/ Expenditures* (in percent)	*Total Expenditures on New Fixed Assets* (in ₱1000)
Manufactures	39.52	₱ 723,432
Services	35.89	656,946
Imports	14.83	271,484
Agriculture, Fishing, Forestry, Mining	5.90	108,084
Indirect Taxes	3.86	70,678
	100.00%	₱1,830,624

Expenditures on net inventory change accounted for 1.76 billion pesos or 10.46% of the gross national expenditures for 1961. Their distribution in terms of individual industry purchases and in terms of major lines of production are contained in the following Tables 33 and 34. Their relativization with respect to the total industry sales are contained in the next two Tables 35 and 36.

Table 33. DISTRIBUTION OF NET INVENTORY CHANGE

Sector	*Industry Purchase as Per Cent of Total Net Inventory Change*	*Value of Total Net Inventory Change* (₱1000)
Agriculture, Forestry, Fishing	42.49%	₱ 749,190
Trade, Wholesale and Retail	9.18	161,917
Transport Services	9.18	161,917
Imports	7.04	124 069
Ferrous Metal Products	5.88	103,666
Construction	3.30	58,215
Rubber Products	3.01	53,044
Indirect Taxes	2.92	51,529
Non-Ferrous Metal Products	2.44	42,961
Chemicals	2.43	42,777
Leather and Leather Products	1.33	23,405
Non-Metallic Products	1.27	22,451
Petroleum Products	1.18	20,748
Non-Electrical Machinery	1.11	19,606
Textile Products	1.05	18,465
Electrical Machinery	0.94	16,468
Footwear	0.84	14,711
Miscellaneous Manufactures	0.81	14,314
Food Manufactures	0.78	13,758

Sector	*Industry Purchase as Per Cent of Total Net Inventory Change*	*Value of Total Net Inventory Change* (P1000)
Paper and Paper Products	0.60	10,583
Beverages	0.55	9,754
Transport Equipment	0.45	7,894
Tobacco Products	0.31	5,398
Mining	0.21	3,591
Other Services	0.18	3,149
Printed Materials	0.17	3,099
Wood Products	0.16	2,905
Furniture and Fixtures	0.15	2,747
Electricity, Gas and Water	0.04	631
	100.00%	P1,762,962

Table 34. DISTRIBUTION OF NET INVENTORY CHANGE BY MAJOR PRODUCTION TYPES

Agriculture, Forestry, Fishing and Mining	42.70%	P 752,781
Manufactures	25.45	448,754
Services	21.89	385,829
Imports	7.04	124,069
Indirect Taxes	2.92	51.529
	100.00%	P1.7b2,962

Table 35. DISTRIBUTION OF NET INVENTORY CHANGE AS PER CENT OF TOTAL INDUSTRY SALES

Sector	*Net Inventory Change as Per Cent of Total Sales*	*Value of Net Inventory Change* (P1000)	*Value of Total Sales* (P1000)
Leather and Leather Products	59,24%	P 23,405	P 39,508
Ferrous Metal Products	49.30	103,666	210,292
Rubber Products	32.79	53,044	161,754
Non-Ferrous Metal Products	24.03	42,961	178,804
Agriculture, Forestry and Fishing	19.02	749,190	3,939,885
Miscellaneous Manufactures	11.89	14,314	120,427
Electrical Machinery	11.85	16,468	138,994
Construction	11.12	58,215	523,442
Non-Metallic Products	10.39	22,451	216,108
Non-Electrical Machinery	9.29	19,606	211,129
Transport Services	8.17	161,917	1,981,331
Trade, Wholesale and Retail	7.64	161,917	2,119,396

Sector	*Net Inventory Change as Per Cent of Total Sales*	*Value of Net Inventory* Change (P1000)	*Value of Total Sales* (P1000)
Imports	7.49	124,069	1,656,811
Footwear	6.79	14,711	216,688
Chemicals	5.92	42,777	722,791
Indirect Taxes	5.44	51,529	947,972
Paper and Paper Products	5.28	10,583	200,289
Petroleum Products	4.57	20,748	453,621
Transport Equipment	4.27	7,894	184,880
Beverages	4.15	9,754	234,865
Textile Products	3.45	18,465	535,586
Printed Materials	2.13	3,099	145,718
Furniture and Fixtures	2.09	2,747	131,151
Mining	1.58	3,591	227,241
Tobacco Products	1.13	5,398	475,630
Wood Products	0.79	2,905	369,232
Food Manufactures	0.36	13,758	3,821,843
Other Services	0.22	3,149	1,423,147
Electricity, Gas and Water	0.21	631	301,131

Table 36. DISTRIBUTION OF EXPENDITURES ON NET INVENTORY CHANGE AS PER CENT OF MAJOR INDUSTRY SALES

Agriculture, Forestry, Fishing and Mining	18.06%	P752,781	P4,167,126
Imports	7.49	124,069	1,656,811
Indirect Taxes	5.44	51,529	947,972
Manufactures	5.12	448,754	8,769,310
Services	3.93	385,829	9,814,823

The structure of Philippine exports and imports are next presented in the group of tables that follow:

Table 37 DISTRIBUTION OF EXPORTS BY INDUSTRY

Sector	*Industry Exports as Per Cent of Total Exports*	*Value of Total Exports* (P1000)
Food Manufactures	40.06%	P 533,718
Agriculture, Fishing, Forestry	13.82	184,167
Mining	11.75	156,510
Banking, Insurance, Real Estate	9.18	122,354
Other Services	8.17	108,933

Sector	*Industry Exports as Per Cent of Total Exports*	*Value of Total Exports* (₱1000)
Textile Products	5.24%	₱ 69,759
Chemicals	3.39	45,124
Wood Products	2.91	38,800
Footwear	2.22	29,550
Re-exports	1.50	19,966
Tobacco Products	1.29	17,175
Ferrous Metal Products	0.16	2,153
Leather and Leather Products	0.11	1,434
Other Manufactures	0.09	1,226
Beverages	0.06	752
Furniture and Fixtures	0.04	469
All Other Exports[1]	0.01	170
	100.00%	₱1,332,260

[1] Represents printed materials, rubber products, petroleum products, non-metallic products, non-ferrous metal products, and non-electrical machinery.

Table 38 DISTRIBUTION OF EXPORTS BY MAJOR INDUSTRY GROUPS

Sector	*Industry Exports as Per Cent of Total Exports*	*Value of Total Exports*
Manufactures	55.57%	₱ 740,330
Agriculture, Forestry, Fishing and Mining	25.57	340,677
Services	17.36	231,287
Re-exports	1.50	19,966
	100.00%	₱1,332,260

Table 39 EXPORTS AS PER CENT OF TOTAL SALES EACH INDUSTRY

Sector	*Export as Per Cent of Total Sales of Industry*	*Value of Total Exports* (₱1000)	*Value of Total Sales of Industry* (₱1000)
Mining	68.87%	₱156,510	₱ 227,241
Food Manufactures	13.96	533,718	3,821,843
Footwear	13.64	29,550	216,688
Textile Products	13.02	69,759	535,586
Wood Products	10.51	38,800	369,232

Sector	*Export as Per Cent of Total Sales of Industry*	*Value of Total Exports* (₱1000)	*Value of Total Sales of Industry* (₱1000)
Other Services	7.65%	₱108,933	₱1,423,147
Chemicals	6.24	45,124	722,791
Agriculture, Forestry and Fishing	4.67	184,167	3,939,885
Leather and Leather Products	3.63	1,434	39,508
Tobacco Products	3.61	17,175	475,630
Banking, Insurance, Real Estate	3.57	122,354	3,426,006
Imports (re-exports)	1.20	19,966	1,656,811
Ferrous Metal Products	1.02	2,153	210,292
Other Manufactures	1.01	1,226	120,427
Furniture and Fixtures	0.36	469	131,151
Beverages	0.32	752	234,865
Printed Materials	0.05	67	145,718
All Other Exports[1]	0.02	53	453,621
Non-Metallic Products	0.01	31	216,108
Rubber Products	0.01	19	161,754

[1] Represents petroleum products, non-ferrous metal products, non-electrical machinery, and transport equipment.

Table 40. EXPORTS AS PER CENT OF TOTAL SALES OF MAJOR INDUSTRY GROUPS

Manufactures	8.44%	₱740,330	₱8,769,310
Agriculture, Forestry, Fishing and Mining	8.17	340,677	4,167,126
Services	2.36	231,287	9,814,823
Imports (re-exports)	1.20	19,966	1,656,811

Table 39. DISTRIBUTION OF IMPORTS BY INDUSTRY

Sector	*Industry Imports as Per Cent of Total Imports*	*Value of Industry Imports* (₱1000)
Households	26.94%	₱ 446,342
Gross Fixed Capital Formation	16.39	271,484
Agriculture, Forestry and Fishing	7.57	125,385
Net Inventory Change	7.49	124,069
Food Manufactures	5.16	85,569
Government	4.53	75.080
Chemicals	3.98	65,933
Ferrous Metal Products	3.91	64,790

Sector	*Industry Imports as Per Cent of Total Imports*	*Value of Industry Imports (₱1000)*
Construction	2.04%	₱ 33,872
Non-Ferrous Metal Products	2.02	33,446
Transport Services	1.79	29,648
Electrical Machinery	1.34	22,185
Petroleum Products	1.31	21,788
Transport Equipment	1.30	21,490
Exports	1.21	19,966
Textile Products	1.20	19,954
Non-Electrical Machinery	1.18	19,530
Paper and Paper Products	1.12	18,556
Tobacco Products	1.10	18,221
Mining	1.06	17,606
Non-Metallic Products	1.01	16.708
Footwear	0.92	15,283
Printed Materials	0.89	14,811
Other Services	0.61	10,099
Electricity, Gas and Water	0.57	9,492
Trade, Wholesale and Retail	0.56	9,219
Other Manufactures	0.56	9,213
Wood Products	0.55	9,098
Rubber Products	0.48	7,885
Furniture and Fixtures	0.43	7,068
Beverages	0.33	5,481
Banking, Insurance, Real Estate	0.26	4,318
Leather and Leather Products	0.12	1,979
Communication	0.07	1,243
	100.00%	P1,656,811

Table 40. DISTRIBUTION OF IMPORTS BY MAJOR INDUSTRY GROUPS

Sector	*Major Industry Imports as Per Cent of Total Imports*	*Value of Industry Imports (₱1000)*
Manufactures (I)	28.91%	₱ 478,988
Household (F)	26.94	446,342
Gross Fixed Capital Formation (F)	16.39	271,484
Agriculture, Forestry, Fishing and Mining (I)	8.63	142,991
Net Inventory Change (F)	7.49	124,069
Services (I)	5.91	97,891

Sector	*Major Industry Imports as Per Cent of Total Imports*	*Value of Industry Imports* (₱1000)
Government (F)	4.53	75,080
Exports (F)	1.20	19,966
	100.00%	₱1.656,811
Final Demand (F)	56.55%	936,941
Intermediate Demand (I)	43.45	719,870
	100.00%	₱1,656,811

Table 41. DISTRIBUTION OF INDUSTRIES IN TERMS OF THE MAGNITUDE OF IMPORT COEFFICIENTS

Sector	*Import as a Per Cent of Industry Output*	*Value of Imports* (₱1000)	*Total Value of Industry Output* (₱1000)
Ferrous Metal Products	30.81%	₱ 64,790	₱ 210,292
Non-Ferrous Metal Products	18.70	33,446	178,804
Electrical Machinery	15.96	22,185	138,994
Transport Equipment	11.62	21,490	184,880
Printed Materials	10.16	14,811	145,718
Paper and Paper Products	9.26	18,556	200,289
Non-Electrical Machinery	9.25	19,530	211,129
Chemicals	9.12	65,933	722,791
Mining	7.75	17,606	227,241
Non-Metallic Products	7.73	16,708	216,108
Other Manufactures	7.65	9,213	120,427
Footwear	7.05	15,283	216,688
Construction	6.47	33,872	523,442
Furniture and Fixtures	5.39	7,068	131,151
Leather and Leather Products	5.01	1,979	39,508
Rubber Products	4.87	7,885	161,754
Petroleum Products	4.80	21,788	453,621
Tobacco Products	3.83	18,221	475,630
Textile Products	3.72	19,954	535,586
Agriculture, Forestry and Fishing	3.18	125,385	3,939,885
Electricity, Gas and Water	3.15	9,492	301,131
Communication	3.08	1,243	40,370
Wood Products	2.46	9,098	369,232
Beverages	2.33	5,481	234,865
Food Manufactures	2.24	85,569	3,821,843
Transport Services	1.49	29,648	1,981,331

Sector	*Import as a Per Cent of Industry Output*	*Value of Imports* (P1000)	*Total Value of Industry Output* (P1000)
Other Services	0.71	10,099	1,423,147
Trade, Wholesale and Retail	0.43	9,219	2,119,396
Banking, Insurance, Real Estate	0.12	4,318	3,426,006
B. Major Industry Groups			
Manufactures	5.46%	P478,988	P8,769,310
Agriculture, Forestry, Fishing and Mining	3.43	142,991	4,167,126
Services	1.00	97,891	9,814,823

Table 42. DISTRIBUTION OF MAJOR SECTORS IN TERMS OF RELATIVE IMPORT REQUIREMENTS

Sector	*Imports as per Cent of Total Requirements*	*Value of Imports* (P1000)	*Value of Total Requirements* (P1000)
Gross Fixed Capital Formation	14.83%	P271,484	P 1,830,624
Net Inventory Change	7.04	124,069	1,762,962
Manufactures	5.46	478,988	8,769,310
Government	4.91	75,080	1,529,317
Households	3.70	446,342	12,047,623
Agriculture, Forestry, Fishing and Mining	3.43	142,991	4,167,126
Exports	1.50	19,966	1,332,260
Services	1.00	97,891	9,814,823

In conclusion, the evidence from the input-output table under consideration defines rather unambiguously that the type of economic protection spawned throughout the 1950's has fructified not only in the emergence of the manufacturing sector and, hence, in the growth of indigenous entrepreneurs but also in pushing the stage of fabrication down the production line, and thereby localizing the production of material inputs, all in all, making for an interlocking and reinforcing system of economic production.

6. **Study of Linkage Effects.** So far, the analysis has been confined to the level and patterns of national income and expenditure. However, the unique value of an input-output table

consists in its capacity to elucidate the system of industrial interdependences about economic production. These interdependences are revealed by a network of inter-industry sales and purchasers.

Recall once more the basic structure of an input-output system. Briefly, total output is exhausted by the intermediate absorption of industries and the final absorption of the major institutional sectors of the economy such as households, business, the government, and the rest of the world. All production is made partly of intermediate inputs from industries and partly of primary inputs from the major institutional sectors.

For study of interdependences of linkage effects about the process of economic production, it is the intermediate purchases among and the intermediate sales between industries that are of primary consideration. The linkage effect among industries may be in the nature of supplying inputs as in the case of intermediate purchases by industry j from industry i. Alternatively, it may take the form of utilizing output as in the case of intermediate sales of industry j to industry i. Hirschman labels the former type of interdependence as backward linkage and the latter as forward linkage.

The measure that is conventionally used to identify the backward linkage is the ratio of total intermediate purchases (U_j) of inputs to the total output (X_j) of an industry. In the case of the forward linkage, it is the ratio of total intermediate sales (W_i) to the total sales or output of an industry. The backward linkage is then the ratio:

$$u_j = U_j/X_j$$

and the forward linkage is the ratio

$$W_i = W_i/X_i$$

Backward Linkages. The measure adopted here excludes purchases of imported inputs. The value of u_j, as can be seen from Table 43, varies from 73.89% in the case of miscellaneous

manufactures to 2.20% in the case of trade. The average value for all the 29 sectors, however, is 41.85%. Using this value as a benchmark, one notices that industries characterized by a u_j value lower than the average for all industries in the system are generally in the nature of 1) service industries, 2) consumer industries, and 3) those to which the service industries themselves are vitally related, e.g., petroleum products.

On the other hand, industries whose u_j values are above the average for all industries as a whole are generally manufacturing industries and such basic industries as mining, agriculture, fishing and forestry. Thus, if one were merely concerned about maximizing backward linkages about the national economic system, the direction of such efforts would be in the area of manufactures generally, and to a less extent that of agriculture and mining. As a matter of fact, to the extent that agriculture and mining supply the material inputs for manufactures, any chronic gains in productivity in agriculture and mining would simply reinforce the type of external economics accruing to the manufacturing activities.

Table 43. DISTRIBUTION OF INDUSTRIES IN TERMS OF MAGNITUDE OF BACKWARD LINKAGE EFFECTS

Sector	Backward (u_j) Linkage (Inter-Industry Purchases as Per Cent of Total Output)	Ranking
Miscellaneous manufactures	73.89%	1
Leather products	72.78	2
Paper products	67.04	3
Wood products	61.49	4
Non-electrical machinery	60.43	5
Chemicals	60.11	6
Footwear	58.34	7
Non-metallic products	57.57	8
Electrical machinery	52.24	9
Textile products	49.76	10
Rubber products	48.46	11
Transport equipment	47.26	12
Non-ferrous metal products	45.81	13
Agriculture, fishing, forestry	44.90	14
Ferrous metal products	44.77	15
Printed materials	44.75	16
Mining	44.26	17

Table 44. DISTRIBUTION OF INDUSTRIES IN TERMS OF MAGNITUDE OF BACKWARD LINKAGE EFFECTS, 1961 — Continued

Sector	Backward (u_j) Linkage (Inter-Industry Purchases as Per Cent of Total Output)	Ranking
Tobacco products	41.30%	18
Construction	37.81	19
Petroleum products	31.57	20
Electricity, gas, water	30.07	21
Food manufactures	29.48	22
Furniture and fixtures	25.75	23
Communication	25.41	24
Beverages	25.15	25
Transport services	14.29	26
Other services	13.83	27
Banking, insurance, real estate	3.05	28
Trade, wholesale and retail	2.20	29
Unweighted average	41.85	

Forward Linkages. Table 44 shows the distribution of industries relative to their individual capacity for forward linkages. The configuration of industries indicates that generally industries with high forward linkage effects are somewhat low on backward linkage effects. As a matter of fact, a Spearman rank correlation applied to both distributions registered a negative relationship of 0.006.

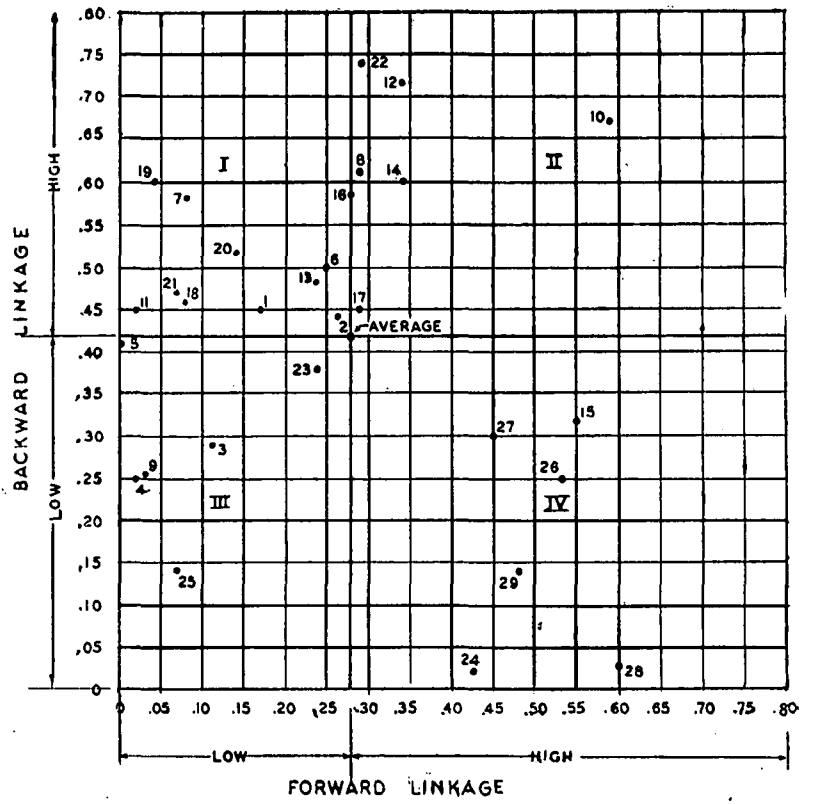
It is also evident from the table that industries with markedly low forward linkages relative to the average of 25.16% for all industries are either 1) primarily fixed capital goods industries or, 2) primarily consumer goods industries.

There are, however, a number of industries which in terms of both the forward and backward linkage distributions persistently register values above the average values for each

distribution. These include paper products, leather products, miscellaneous manufactures, wood products, chemicals, non-metalic products and textile products.

Chart I presents the scatter of industries in terms of their capacity for both forward and backward linkages. At least for these seven (7) industries, one could expect an expansion path over time nourished by a network of reinforcing forward and

CHART I



Sector	Backward Linkage	Forward Linkage
22	.7389	.2947
23	.3781	.2381
24	.0220	.4290
25	.1429	.0696
26	.2541	.5344
27	.3007	.4472
28	.0305	.6027
29	.1383	.4835
AVERAGE	.4185	.2812

SOME AVERAGE FORWARD-BACKWARD LINKAGES

	Backward Linkage	Forward Linkage
Italy	.438	.411
Japan	.487	.561
Norway	.364	.304
Philippines	.419	.281
U.S.A.	.426	.419

7. **Applications of Input-Output Analysis.** Aside from purely statistical considerations, input-output analysis has other, and perhaps more important, uses. It has been mentioned earlier that this technique of social accounting is uniquely capable of telling on the gaps about a country's system of national statistics. It is equally versatile for structural analysis and economic forecasting. However, its capacity for the latter type of analysis is premised on assuming a certain degree of stability about the system's economic parameters.

As a matter of fact, if contemporary studies in other countries are any good, they indicate for purposes of primarily short-run analysis, a given input-output table as remarkably versatile. The short-run here is usually defined in terms of three years. For long-run structural analysis, obviously what is required at least initially, is a comparative study of a series

of tables set up at intervals of three years, say, for a period of fifteen to twenty-five years.

In the following, some of the various possible uses of input-output analysis are illustrated, although they do not exhaust the range of other possibilities. They are based on what is known in literature as the matrix multiplier. The matrix multiplier is the inverse of the original matrix of transactions coefficients. The inversion was accomplished by the Los Baños Computing Center, University of the Philippines. However, subsequent manipulations of the inverse matrix were performed by the Bureau of the Census and Statistics on its 1401 IBM Computer. The manipulations consisted in multiplying either 1) the elements of the inverse matrix, 2) the elements of the transpose of the inverse matrix, or 3) elements of a diagonal matrix derived from the inverse matrix, by a column vector whose elements represent the different economic parameters of the input-output system.

Estimate of Import Content of Output. The direct and indirect import content of output can be estimated by premultiplying a column vector whose elements are ratios of direct imports to output in each industry, i.e., the import coefficients, by the transpose of the inverse matrix. The product, then, indicates not only the imported inputs directly required for production, but also those indirectly required as a result of the fact that even those domestic inputs absorbed directly by one industry from others also have imported ingredients in them.

The results of this operation are shown in Table 46. It is clear from the magnitude of the results that the extent of dependence of Philippine industries on imported inputs does not substantially change even after all the indirect import requirements have also been taken into account. And, except for the ferrous metal products, non-ferrous metal products and electrical machinery industries, Philippine industries really do not appear to be notably dependent on imported inputs. Moreover, the ranking of industries before and after the indirect import requirements have been considered has not materially changed.

One practical use of such a table is to provide a more precise estimate of the total imported input requirements of the different industries or the entire national economy for that matter. It has been the practice in some government agencies when estimating the imported input requirements of certain industries or of the economy to consider only the magnitude of the import coefficient, i.e., the direct import content of output. Clearly, under a system of industrial interdependence which is the realistic situation, such estimates of imported input requirements fall short of the total requirements by an amount representing the indirect imported input requirements.

As a matter of fact, even the estimates of the national foreign exchange gap between requirements and availabilities can be grossly understated or overstated depending on whether only direct or both direct and indirect imported input requirements are taken into account. This consideration can appreciably vitiate substantive parts of an economic development plan or forecast.

Table 48. ESTIMATE OF IMPORT CONTENT OF OUTPUT

Sector	Ranking		Import content	
	Direct	Direct and Indirect	Direct	Direct and Indirect
1	3.18%	3.87%	20	22
2	7.75	9.10	9	12
3	2.24	3.05	25	24
4	2.33	3.03	24	25
5	3.83	5.77	18	17
6	3.72	5.10	19	19
7	7.05	9.58	12	11
8	2.46	4.00	23	21
9	5.39	6.58	14	14
10	9.26	11.95	6	7

Table 48. ESTIMATE OF IMPORT CONTENT OF OUTPUT

Sector	Ranking		Import content	
	Direct	Direct and Indirect	Direct	Direct and Indirect
11	10.16%	13.10%	5	5
12	5.01	6.25	15	16
13	4.87	6.58	16	15
14	9.12	12.01	8	6
15	4.80	5.68	17	18
16	7.73	9.70	10	10
17	30.81	36.34	1	1
18	18.70	22.08	2	2
19	9.25	10.29	7	8
20	15.96	19.38	3	3
21	11.62	13.46	4	4
22	7.65	10.13	11	9
23	6.47	7.92	13	13
24	0.43	0.50	28	28
25	1.49	2.18	26	26
26	3.08	3.54	22	23
27	3.15	4.14	21	20
28	0.12	0.16	29	29
29	0.71	1.05	27	27

Estimate of Prices of Output in Terms of Primary Inputs. The value or price of industry or commodity (j) is decomposable into the value inputs absorbed in the course of its production. These inputs are the sum of produced and non-produced, i.e., primary inputs. However, it is possible to further decompose the value of the produced inputs absorbed by the productive process j in terms of the primary or non-produced inputs.

This operation requires postmultiplying a row vector from the transpose of the inverse matrix, representing industry j, by a column vector whose elements consist of the ratio of a particular primary input to the total output in every industry. A replication of this operation for all industries and each primary input results in a schedule which shows for each industry the

relative importance of every primary input in its output, i.e., its price in terms of primary inputs.

Such a distribution is tabulated in Table 7.2 below.

Table 49. PRICES OR VALUE OF OUTPUT IN TERMS OF PRIMARY INPUTS

Sector	Imports	Net Indirect Taxes	Depreciation	Wages	Profits, Rents Interest	Total[a]
1	3.87%	0.77%	3.39%	35.54%	56.47%	100.04%
2	9.10	5.42	11.85	30.08	43.72	100.17
3	3.05	1.48	1.79	8.81	84.95	100.08
4	3.03	17.72	4.23	16.42	58.65	100.05
5	5.77	31.75	2.78	16.98	43.11	100.39
6	5.10	5.16	5.28	17.66	66.96	100.16
7	9.58	3.54	6.73	24.47	55.89	100.21
8	4.01	1.82	7.51	27.03	59.83	100.20
9	6.58	2.98	2.48	12.76	79.74	104.54[b]
10	11.95	10.62	4.89	15.83	56.82	100.11
11	13.10	3.78	6.29	29.33	47.68	100.18
12	6.25	6.27	2.95	14.45	70.22	100.14
13	6.58	4.08	4.65	17.53	67.40	100.24
14	12.01	5.98	4.35	15.33	62.81	100.48
15	5.68	21.28	4.82	6.52	61.72	100.02
16	9.70	6.32	7.34	17.70	59.17	100.23
17	36.34	12.97	3.51	11.17	36.11	100.10
18	22.08	10.04	4.57	19.81	43.88	100.38
19	10.30	13.31	3.08	17.52	55.95	100.16
20	19.38	12.31	5.04	14.97	48.69	100.39
21	13.46	21.09	6.28	18.30	41.09	100.22
22	10.13	7.04	17.16	19.86	81.13	135.32[b]
23	7.92	0.78	38.61	16.07	41.71	105.09[b]
24	0.50	0.09	1.80	12.94	84.68	100.01
25	2.18	1.26	34.75	11.58	61.96	111.73[b]
26	3.54	0.49	11.90	55.11	29.03	100.07
27	4.14	2.04	7.73	15.89	70.27	100.07
28	0.16	0.02	0.31	2.64	96.53	99.66
29	1.05	0.20	3.71	36.99	58.13	100.08

[a] The relative values do not always add up precisely to 100% because of rounding-off errors.
[b] Preliminary figures.

Such a table is useful in describing the structure of industrial costs for a given period. As a matter of fact, for analysis of inflation of the structural type, the above distribution suggests the direction and the magnitude of repercussions in cost changes between industries in the system. It is also suggestive of the incidence on factor payments of a change in the level of final demand, both as to the distribution and extent of the impact.

Illustrative Analysis of the Price Effects of the Petroleum Tax Proposed in the Marcos Tax Program, FY 1969. As an exercise in the area of analysis suggested by the preceding paragraph, one could consider the proposed increase in the specific taxes on petroleum products, which is part of the Marcos Tax Program for the fiscal year 1969.

As the proposed tax bill has them, these taxes come in three variants: on gasoline, lubricating oil, and crude oil, to be applied over a period of time at graduated rates for some products. The tax increases are quoted in terms of specific taxes. These, however, can be translated into their ad valorem equivalents very easily once the weighted average price of the commodities in question is given. Assuming that all these adjustments have been made, and that the effective tax increase over the period under consideration is 40% of the initial level, the incidence of such a tax increase would be to raise industrial costs across the board to the extent that petroleum is an input to the industries.

Suppose that the cost of production before the tax increase was set at 1.00, the effect of a tax increase of 40% on petroleum products would be to raise unit cost of production in each industry by a factor which is the product of 1) the petroleum dependence ratio of this industry, and 2) the given rate of increase in the tax on petroleum products. An index of one industry's dependence on the petroleum industry must reflect both direct and indirect absorption of petroleum products in the course of its production process. It represents the direct effects and "feed backs" of cost of petroleum products in terms

of proportion to total industrial costs of industries. Such an index is an element in the inverse matrix at the intersection of the row for petroleum industry and the column for the other industry. If this inverse coefficient is now multiplied by 1.40, which reflects the increment in the unit price of petroleum products due to the 40% tax increase, the product would represent the new unit cost of production for that industry embodying the effect of a tax-induced higher unit price for petroleum inputs absorbed in its production process. A replication of this procedure for all the 29 industries in our I-0 table would result in a schedule such as Table 50 below, which shows (column 3) the extent of effect of the increased petroleum tax on the individual industries and the distribution of its incidence among the different industries.

Table 50. DISTRIBUTION OF THE EFFECT ON UNIT COST OF PRODUCTION OF AN INCREASE OF 40% ON PETROLEUM PRODUCTS

Sector	Petroleum Dependence Ratio	Increase in Sectoral Unit Cost of Production (3) = 1.40 x (2)	Household-Industry Dependence Ratio	Increase in Prices Paid by Households (5) = (3) x (4)
(1)	(2)	(3)	(4)	(5)
1	.007777	.0109	.196038	.0021
2	.053620	.0751	*	*
3	.010422	.0146	.249334	.0036
4	.006764	.0095	.018419	.0002
5	.006632	.0093	.039750	.0004
6	.010532	.0147	.024620	.0004
7	.006782	.0095	.013493	.0001
8	.028952	.0040	.010103	.0004
9	.003701	.0052	.011066	.0001
10	.009127	.0128	.005575	.0001
11	.007799	.0109	.004711	.0001
12	.004696	.0066	.000066	*
13	.012684	.0177	.004825	.0001
14	.023657	.0331	.033168	.0011
15	1.007561	1.4106	.008457	.0119
16	.085852	.1202	.003645	.0004

Sector	Petroleum Dependence Ratio	Increase in Sectoral Unit Cost of Production (3) = 1.40 x (2)	Household-Industry Dependence Ratio	Increase in Prices Paid by Households (5) = (3) x (4)
(1)	(2)	(3)	(4)	(5)
17	.010161	.0142	*	*
18	.010611	.0148	.000988	*
19	.007903	.0111	.000746	*
20	.005296	.0074	.004106	.0001
21	.008313	.0116	.003479	*
22	.027485	.0385	.000852	*
23	.013498	.0189	.017398	.0004
24	.003194	.0045	.072098	.0003
25	.052941	.0741	.131022	.0097
26	.004247	.0059	.001157	*
27	.094404	.1322	.006434	.0008
28	.000297	.0004	.088509	*
29	.002663	.0037	.050099	.0002
		TOTAL	1.000000	.0325

A further question to ask, and which directly affects the Filipino consumer, is: what effect do these increases in industrial costs, triggered off by a 40% increase in petroleum taxes, have on consumer prices and, therefore, on consumer real income and material well-being? This effect clearly is the sum of the price effects on individual industries which deliver goods and services to the household sector. To estimate the impact due to each industry's delivery to the household sector, one must find the product of 1) the new increase in unit cost of production for each industry, and 2) the dependence ratio of household consumption on this industry's output. Having done this, add up all the price effects on individual industries. The sum represents the totality of effect on the prices paid by households on the same bundle of consumer goods and services as of a given period.

The results of such a procedure are presented in column (5) of table 50. The index used to capture household de-

* Either nil or negligible effect.

pendence on an industry's output is the proportion of the total household expenditures on goods and services from the 29 industries that goes into the purchase of this industry's output. This is obtained from the original transactions table.

Thus, assuming no lag in price effects and summing all these up, a 40% increase in the tax on petroleum products provokes a rise in the level of consumer prices equal to .0325 or 3.25% of the level before the tax increase and at 1961 prices. In current prices, which run to roughly 50% since 1961, this 3.25% could generate to as much as 5% increase in current consumers price index. In a sense, one could interpret this increase as the price multiplier effect of an increase in indirect taxes on petroleum product. It is equivalent to a summation of an expansion series of effects communicated throughout the structure of household expenditures on goods and services. In real terms, this 3.25% in consumer prices translates in a reduction in consumer real income and sense of material well-being by the same proportion.

The magnitude of the rise in the price level in this instance reflects 1) unit cost of production in 1961 prices, 2) the degree for interdependence among industries in 1961, and 3) given coefficient of elasticity about industry supply. Clearly, depending on the values assumed by any of these three parameters in any given time, the percentage rise in the general level of consumer prices may be greater or smaller.

One further point remains to be made. The above analysis is limited to the price effect of a 40% tax increase on petroleum products insofar as household expeditures are concerned. Obviously, to capture the totality of effect communicated throughout the entire economic structure of the Philippine economy, one must estimate the price effects individually absorbed by the other components of final demand, viz., government purchases of goods and services, new capital expenditures and exports. Estimation of the latter effects is simply a matter of extending the sort of analysis shown for household expenditures. The

reader may pursue these other analyses himself on the basis of information supplied in this report.

Our primary aim in this exercise has been to indicate the possibilities and direction of analysis implicit in the various manipulations of the inverse matrix of an input-output table.

8. **Summary of Findings.** Employee compensations in 1961 constituted 21.82% of a GNP of ₱16.85 billions. This magnitude was the combined effect of 1) generally subsistence wages, 2) an inchoate labor unionism, 3) stable wage expectations, and 4) the structure of business organization in the Philippines at the time. Service industries accounted for 51.53% of all employee compensations, primary production for 33.15%, and manufactures for 15.32.%.

Profits, rents and interest income represented 64.79% of the GNP and reflected widespread capital shortages. Service industries generated 61.29% of all profits, rents and interest payments, manufactures 31.34% and primary production 7.37%. In general, industries which on purely individual bases were the most profitable, also turned out to be the most socially productive insofar as relative contributions to GNP and capacities for reinvestment were concerned.

Indirect taxes less subsidies contributed 5.63% to the GNP. Besides the incidence of collection inefficiency and technical smuggling, such a small proportion also implied 1) an economic dualism which effectively reduced the size of the taxable base to the monetized modern sector, and 2) a regime of subsistence wages. Manufactures accounted for 57.15% of the net indirect taxes, household purchase of goods and services for 26.64%, new purchases of capital goods and services for 12.89%, primary production for 2.61%, and government purchases of goods and services 0.71%. The structure of net indirect taxes in 1961 has been rather regressive.

Depreciation allowances amounted to 7.76% of the GNP. On the whole, this magnitude indicated the relatively modest

capital requirements of Philippine industries. The major portion of depreciation charges was contributed by service industries, accounting for 72.56% of the total depreciation bill, with the transport services representing 50.51%, and construction 14.53%. Manufactures formed 14.65% of the depreciation allowances, primary production 6.61%, households 5.56% and government 0.62%.

Household expenditures amounted to ₱12.05 billion, which is 71.51% of the final expenditures of the Philippine economy in 1961. Approximately 41% of household expenditures went into purchases of manufactures, 34.21% into purchases of services, 18.29% in consumption of agricultural and fish products, 3.70% in consumption of imports, and 2.10% in indirect taxes.

Government current consumption of goods and services represented 9.08% of the national expenditures of ₱1.53 billion. Nearly half of these expenditures, or 46.58% to be exact, were used towards compensation of government employees in the course of supplying different types of public services. Government absorption of manufactures accounted for 23.03% of the expenditures, consumption of other services 22.12%, imports 4.91%, and purchases of agricultural, forestry and fish products 2.39%.

New fixed capital expenditures totaled ₱1.83 billion, or 10.87% of the final expenditures. About 40% of these reflect accumulation by manufacturing industries, 35.89% by service industries, 14.83% imports, 5.90% by agriculture and fishing, and 3.86% payment of indirect taxes. The level of working capital or net inventory change reached ₱1.76 billion or 10.45% of the national expenditures. Agriculture accounted for 42.70% of the net inventory change, manufacturing industries for 25.45%, service industries for 21.89%, imports for 7.04%, and indirect taxes for 2.92%. The ratio of net investment to net national product in 1961 was 14.66%, at prices prevailing during that period.

Total export of goods and services, i.e. the current account in the Philippine balance of payments statement amounted to

₱1.33 billion or 7.91% of the national expenditures for 1961. Exports of goods accounted for 82.64% of the total exports with manufactures representing 55.57%, agricultural and mining products 25.57%, and re-exports 1.50%. Only 17.36% of the country's exports were in the form of services.

Imports of goods and services, on the other hand, totaled ₱1.65 billion, or 9.7% of the national expenditures. More than half of these, 56.55%, was absorbed by final demand and the other 43.45%, by intermediate demand. Consumption of imports by households accounted for 26.94% of the final demand for imports, new fixed capital requirements 16.39%, net inventory change 7.49%, government current consumption 5.53%, and exports 1.20%. The bulk of the imports absorbed by intermediate demand went into the manufacturing industries, 28.91%. The remainder was absorbed by agriculture and mining, 8.63% and by service industries, 5.91%.

On the basis of the 1961 transactions table, the following industries registered high backward and forward linkages: mining, wood products, paper and paper products, leather and leather products, chemicals, non-metallic products, ferrous metal products, and miscellaneous manufactures. These are the industries which have the greatest degree of interdependence in the national economy and therefore, have the greatest potential to contribute towards an interlocking system of internal and external economies evocative of more output.

The inverse matrix of the original transactions table has been manipulated to reveal 1) the direct and indirect import requirements of output, 2) the prices of output in terms of primary inputs, and 3) the magnitude and distribution of the effect of the proposed surtaxes on petroleum products contained in the Marcos Tax Program for FY 1969. These, of course, do not exhaust the uses to which the inverse matrix can be applied. As a matter of fact, several foreign scholars have been using portions of the data gathered in the course of the research even before they could be published in a report such as this one.

(a) A large difference has been observed between the GNP figure of the National Economic Council (NEC) and that derived from this inter-industry study. For 1961, the (revised) GNP estimated by that office was ₱13,427[1] million whereas our findings (Table 5) show a GNP of ₱16,846 million or a difference of some ₱3,419 million. This amount is about 25.5% more than the estimated NEC figures. The national income estimated by the NEC was ₱11,746 million whereas the estimate based on this study is ₱14,590 million or a difference of some ₱2,844 million, representing some 24.2% more than the NEC estimate.

On the other hand, the national income data derived from the "1961 Philippine Inter-industry Relations (Input-Output) Table" also recently released by the NEC showed even marked decreases in both the GNP and NI figures including their various components. From that table, GNP was estimated at ₱12,504 million, some ₱923 million less than its previous report of ₱13,427 million. National income amounted to only ₱10,958 million or ₱788 million less than the previous estimate.

Other differences observed are shown in the comparative table below:

	B C S I - 0 (₱1000)	Income Account NEC National (₱1000)	N E C I - 0 (₱1000)
Compensation of employees	₱ 3,675	₱ 4,951	₱ 5,339
Profits, rents interest	10,914	6,795	5,619
NI (at factor cost)	₱14,589[2]	₱11,746	₱10,958
Depreciation allowances	1,308	696	623
Indirect taxes less subsidies	948	985	923
GNP	₱16,846	₱13,427	₱12,504

[1] "Analysis of the National Income of the Philippines for CY 1960-1962", mimeographed copy distributed by the National Economic Council in September, 1963.
[2] Does not add to ₱14,590 due to rounding.

In (c) following, it is shown that the NEC estimates of output were based on purchasers' price so that a good portion of output accruing to the trade sector has been included in the non-trade sector. It is reasonable therefore to believe that profits, rents, and interest in the non-trade sector is understimated by an amount equivalent to the product of output accruing to the trade sector and the difference in the trade and the non-trade profits coefficients. It should be noted that the "wholesale and retail" coefficient is among the highest (.82940) being second only to "banking, insurance and real estate" (.96952). With respect to this last sector, the BCS I-0 gives a value-added amounting to ₱3,322 million, of which ₱3,230 million is attributed to "profits, etc." and only ₱81 million went to compensation of employees. The NEC I-0 showed a value-added of only ₱984 million, of which ₱361 million went to wages and salaries, ₱523 million went to "other value-added."

(b) Similar degrees of discrepancy on the expenditure side are apparent:

	B C S I - 0 (₱1000)	NEC National Income Account (₱1000)	N E C I - 0 (₱1000)
Private Consumption Expenditure	₱12,048	₱10,814	₱11,129
Government Current Expenditure	1,529	1,223	1,088
Gross Domestic Investment	3,594	1,792	2,623
Exports of goods and services	1,332	—	1,176
	₱18,503	₱13,829	₱16,016
Less: Imports of goods and services	1,657	402 [1]	3,290
GNE	₱16,846	₱13,427	₱12,726

The BCS inter-industry study shows total current expenditure in the private sector of ₱12.048 million which is ₱1,234

[1] This represents "net import and investment income."

million larger than the NEC figure of ₱10,814 million in its National Income Accounts. This figure was obtained essentially from the 1961 BCS Households Survey of Income and Expenditure and supplemented by other sources. The difference in government current expenditure is less pronounced whereas the BCS I-0 estimate for gross domestic investment of ₱3,594 million (consisting of ₱1,831 million in fixed assets and ₱1,763 million in net inventory changes) is more than double the NEC national account figures for gross domestic investment of ₱1,792 million and ₱971 million more than the NEC I-0 estimate of ₱2,623 million. It may be observed that during this period, a number of firms had been building inventories in anticipation of full decontrol.

Exports of goods and services in 1961 amounted to only ₱1,332 million based on the BCS I-0 data. The NEC national accounts and I-0, however, reported ₱2,347 million and ₱1,176 million, respectively. The BCS estimated a total import of ₱1,657 million against the NEC national accounts and I-0 of ₱2,596 and ₱3,290 million, respectively. This marked difference in the foreign trade data given in the two input-output tables is indeed sizeable. While the BCS (which compiles foreign trade data from *basic* documents and Customs' manifests) gives a figure on exports of ₱1,332 million which cover some 80.4% of its import value of ₱1,657 million, the NEC data on exports was ₱1,176 million, representing only 35.7% of its import data of ₱3,290 million.

(c) Table 10 gives the (gross) value-added distribution by industry. It shows an approximate per cent distribution of national product by industrial origin. However, a more comparable distribution to "National Income by Industrial Origin" of the NEC is indicated below. The NEC I-0 figures are also given in order to determine the level of discrepancies among the various estimates.

	BCS I-0 (₱1000)	Per Cent	NEC National Account (₱1000)	Per Cent	NEC I-0 (₱1000)	Per Cent
Agriculture, Forestry and Fishing	₱ 1,943	.133	₱ 3,858	.328	₱ 3,683	.336
Mining	80	.006	209	.018	125	.011
Manufacturing	3,984	.273	2,090	.178	2,288	.209
Construction	102	.007	428	.036	365	.033
Trade, Banking, Insurance and Real Estate	5,337	.366	1,410	.120	2,203	.201
Transportation and Communication	1,032	.071	416	.035	328	.030
Other Services	2,112	.144	3,335	.285	1,966	.180
NI (at factor cost)	₱14,590	1.000	₱11,746	1.000	₱10,958	1.000

The BCS inter-industry data shows the relatively small contribution to national income of the agricultural sector. The NEC figures run to roughly a third whereas the former gives only about one-seventh of NI. One major reason for this is that the NEC data are on purchaser's price whereas that of the BCS I-0 estimates are on producers' price. Since

$$\text{Purchasers' Price} = \text{Producers' Price} + \text{Trade Margin} + \text{Transport Services} + \text{Indirect Taxes},$$

the industry value-added in the NEC data is expected to be larger in general by amounts equal to the "trade margin" and "transport services" included in a particular industry while the BCS I-0 data will be larger by these quantities in the "trade, banking, insurance, and real estate" and "transportation and communication" sectors, respectively.

The BCS inter-industry study showed that these "trade margins" ranged from 4% of output in palay and corn industries to as much as 45% in the vegetable and related industries and more than 53% in forestry. Some initial calculations, using the NEC I-0 data, revealed that as much as ₱1,000 million of the value-added in the "agriculture, forestry and fishing" sector

should have been included in the "trade, banking, insurance and real estate" sector. With this adjustment alone, the agriculture, forestry and fishing" sector would drop from 33% to 24%, whereas the "trade, banking, insurance and real estate" sector would rise to more than 29%. If further adjustments are made for "transport services", the results could be well below 24% for the "agriculture, forestry and fishing" sector and more than 29% for the "trade, banking, insurance and real estate" sector.

The effect of classifying an economic activity in a sector where it does not properly belong is reflected in the contribution to national income of this particular activity. If, for instance, a ₱100 output is included in agriculture its contribution to national income is only about ₱49 whereas if included in the "wholesale and retail" sector, the same output contributes about ₱96 to national income.

To a certain extent, the classification of economic activities has accounted for some of these discrepancies observed in the industrial origin of NI. The NEC had included, for instance, copra production in the agriculture sector which was classified in "manufacturing" in the BCS scheme of classification A sizeable amount of unlicensed and other small scale manufacturing activities may not have been included in the former figure as well.

Besides the above considerations, a basic explanation for the low proportion of value-added contributed by agriculture to the national income is the type of agriculture which engaged the majority of Filipino farmers—subsistence agriculture The subsistence nature of Philippine agriculture is an amalgam of antiquated production techniques, the seasonality and prolonged gestation periods for farm output and intense population pressure among the farm communities.

The sectors for "mining" and "construction" in the BCS I-0, being in producers' price, were expected to be larger than the corresponding figures in the NEC estimates, though

the "'trade margins" in these sectors may not be as substantial as those of "agriculture, forestry and fishing".

A suprising sector is easily the "Banking, Insurance and Real Estate". The BCS I-0 recorded a total value-added of some ₱3,311 million representing about 22.70% of national income. In the NEC national accounts, income orginating in this sector was embedded in the "'trade" sector which was obtained using a composite index derived from other sectors. There is reason to believe, therefore, that income originating in this sector had been practically neglected in previous NEC estimates. In addition, rental value of owner-occupied dwellings which amounted to over ₱1,000 million in 1961 was included in *Services* (NEC National Income Accounts) whereas this same estimate was included in real estate in the Bureau's I-0 figure.

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