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Studies of Philippine economic development have neglected to inquire on the accuracy of recorded foreign trade data to a surprising extent, having utilized on faith the trade statistics compiled by the Central Bank and the Bureau of Census and Statistics.[1] The intimate link between trade performance and pattern of development that has emerged from such studies would seem to suggest the need for a more careful scrutiny of the official estimates of trade flows than has actually been done. This may well apply to most small, open economies for which research findings are made and policy decisions taken on the basis of official trade data with little regard for the quality of such recordings.

The objective of this paper is to examine the reliability of Philippine import statistics and the factors standing in the way of accurate recording of import transactions. A recurrent finding in studies of a similar kind is the substantial divergence existing between bilateral country recordings of trade flows. Among the reasons often cited are: differences in commodity coverage and classification, time lags in recording, transport cost and other charges (in the case of f.o.b. valuation of exports and c.i.f. valuation of corresponding imports),

differences in the method of designating partner countries as to provenance or destination, and exchange rate overvaluation. Divergences may be expected to originate also from causes that exert their influence in a random manner. It is argued here that the inaccuracies of Philippine import trade data are neither random nor can they be adequately explained by the major sources cited above. One would then have to grant that a systematic bias in import recordings exists, offering an incentive to deliberate falsification of reports. One such bias that is most pertinent in the Philippine context is the tariff structure prevailing in the country during the 1960s. The hypothesis we want to test is that a large part of the import data undervaluation over the period 1962-1969 has been induced by the tariff duties levied on these imports.

The first part of the paper is devoted to an examination of official estimates of Philippine import trade with its two principal trading partners, Japan and the United States, over the period 1962-1969. Discrepancies between bilateral sets of recordings are analyzed, indicating the overall magnitudes of understatement and overstatement of Philippine trade statistics relative to partner country data. Period totals are presented to minimize data differences due to time lags in recording.

Preliminary investigation of such discrepancies having shown evidence of apparent inaccuracies in partner country trade data as well, an alternative method of approximating the true values is presented.

The divergence of Philippine and partner country recordings from the alternative data set thus derived is then discussed in terms of the differing implications of the three alternative sets of estimates on the trend of Philippine imports in the aggregate.

"Totals" or "aggregates" tend to cover discrepancies and cancel out opposing errors at finer levels of aggregation; hence examination of aggregative data will not give an adequate account of the extent of data inaccuracy. Comparisons of data are thus carried out at the 1-, 2- and 3-digit SITC levels with a view to identifying import commodity groups that have contributed significantly to total discrepancies. Comparisons are deemed inadvisable beyond the 3-digit level because of the likelihood that an extremely high incidence of discrepancies will be attributable simply to differences in recording definition and commodity classification. [2/]

In the last part of the paper the relationship between tariff rates and the observed differences in pairwise recordings across commodity groups is examined statistically using the three alternative import data sets.

Comparison of Bilateral Trade Recordings

The use of an identical method of valuation of trade flows eliminates one of the more obvious factors behind data discrepancies, that of transport cost and other service charges. Philippine import

data are valued c.i.f. as most published import figures are, while cor-responding exports from the United States and Japan are in f.o.b. values. These are available in the various issues of the Commodity Trade Statistics (United Nations) and Foreign Trade Statistics of Asia and the Far East (ECAFE). The standard procedure in converting c.i.f. figures into f.o.b. uses a 10 per cent margin. This assumes away possible variations across commodities in the ratio of transport cost and other related charges to total cost of the imported good. However, significant departures from 10 per cent of the actual margin between the c.i.f. and f.o.b. values have been observed, the margin tending to vary inversely with the value per unit weight of the commodity (Moneta, 1959).

Freight and insurance costs of imports are available in the Foreign Trade Statistics of the Philippines, published by the Bureau of the Census and Statistics. These margins are used to adjust annual c.i.f.-valued imports at the 3-digit SITC level into f.o.b. values, instead of the unvarying 10 per cent margin. Period totals show an f.o.b.-c.i.f. ratio of 0.898 for the United States and 0.911 for Japan, indicating a slightly conservative estimate of divergence in pairwise recordings for the latter, and a discrepancy 0.2 percentage points higher for the former in relation to the standard 10 per cent margin employed.

Philippine import data and corresponding export figures of the United States and Japan are shown in Table 1 in f.o.b. values over the period 1962-1969. Annual and period totals show substantial divergence

between bilateral recordings, the absolute amounts being higher in the case of imports from Japan. In the aggregate the divergence represents as much as 16.62 per cent of the value of Philippine imports from the United States and 27.37 per cent of imports from Japan.

Still another illustration of the degree of discrepancy between pairwise recordings is evident in the import ratios given in the last column of Table 1. These show a consistent understatement of Philippine imports relative to the exports of its two trading partners, the departures from one of the ratios being greater in the case of imports from Japan, except in 1966.

Implicit in the approach of evaluating the accuracy of foreign trade data by means of a comparison of bilateral recordings of trade flows is the assumption that pairwise recordings refer to the same trade transaction and thus should be equal conceptually. This is presumed to be the case where an identical system not only of commodity coverage and classification but also of designating trading partners is used. Exports are then credited to the country to which the goods are consigned (country of last consignment) and imports are credited to the country from which the goods were first consigned (country of first consignment). In the event of a difference in trading partner designation, as for instance when imports are recorded by country of production while exports are by country of last consignment, the (bilateral) ratio of pairwise recordings can lie anywhere between zero and infinity,[3/] so that divergence

from one (or from 1.10 for unadjusted c.i.f. import ratios) cannot be immediately taken as a sign of errors and deliberate falsification of trade data (Luey, 1971).

In the present case, however, such an asymmetrical method of recording origins and destinations is not expected to constitute a major source of data discrepancies, because of the relative unimportance of entrepôt trading between the Philippines and her two trading partners. The United States records separate estimates for national exports and re-exports by country of last consignment, the latter averaging only about 1 per cent of the value of national exports to the Philippines. The export data presented here consist then of exports originating from the United States as the country of production and are recorded accordingly in the Philippines. Unfortunately, no separate entries for exports and re-exports are available for Japan which records export data by country of last consignment, but the geographic proximity as well as the fact that Japan is not a major entrepôt trader tend to rule out the possibility of definitional differences explaining a significant portion of observed discrepancies.

On the other hand, imports of the Philippines are recorded by country of production and make no distinction as to the value of commodities that pass through other countries. However, one can infer from the records of entrepôt traders in the area, namely, Singapore and Hongkong. The former is not a major exporter to the country, total

exports to the Philippines amounting to only $32.35 million or 0.46 per cent of total Philippine imports for the period. Hongkong is a more important source of imports, having contributed around 1.19 per cent of total Philippine imports for 1962-1969; re-exports are valued on the average at around 1.5 times national exports to the country. Again there is no direct means of finding out if the bulk of such re-exports come from the United States and/or Japan, and are recorded as imports from these as their countries of production. Or even granted that they do, there is still no compelling reason to suppose that these re-exports can account for most of the observed discrepancies, as they constitute only a little over 7 per cent of the total understatement of the value of imports from the two major trade partners. Moreover, about 30 per cent of such re-exports belong to the SITC 5 category, and around 29 per cent to SITC 6 and 7 combined. As will be seen in a later section, however, most of the discrepancies (as much as 50 to 80 per cent) originate from the latter two SITC groups, and only about 13 per cent are attributable to SITC 5. Another salient objection, as Colosi et al.,(1972) have similarly pointed out in the case of Thailand and the Philippines, is that considering the method of trading partner designation, one can expect the import ratio, at least for the United States, to be greater than one, since the denominator consists only of national exports while the numerator is the sum of direct and indirect imports from the United States. This is evidently not the case with most of the bilateral ratios presented in Table 1. Hence, it is unlikely that differences in

trading partner designation can explain away a major portion of the divergence in country trade recordings.

One other possible source of disparity of bilateral trade data is exchange rate overvaluation. It is possible that the data-collecting institution (such as the United Nations), in converting data in domestic currency into dollar equivalents for international compara-bility, may be using an exchange rate different from the free market rate used by developed partner countries. This is a typical occurrence for countries under exchange control and multiple exchange rate systems, when official and free market rates may diverge considerably. Again this factor is not likely to be a major source of discrepancy in the Philippine case due to a number of reasons. Trade data submitted by the domestic data-gathering agency are expressed in dollar values and hence do not need conversion into dollar values. The time period under con-sideration has also been characterized by a policy of decontrol and free floating of the peso prior to the formal devaluations of 1965 and 1970, during which time the official exchange rates can be assumed to approxi-mate closely free market rates. Finally, a test involving several Asian countries to determine whether the use of a free or black market rate instead of the official rate would modify the observed discrepancies showed that for the Philippines (as for Malaya, Singapore and Thailand) adjusted bilateral ratios with the developed countries (DCs) did not differ significantly from unadjusted ratios. This is interpreted to

indicate "a similarity of conversion factors between the two groups of countries " (Naya and Morgan, 1969; p.461).

Maximum Trade Values

In similar studies, it has been customary to assume that DC partner trade data represent the "true" values. However, a cursory examination of bilateral trade data at some more disaggregative level would suggest that relative underreporting of trade transactions also characterizes the recorded statistics of Japan and the United States. In Figures 1 and 2, Philippine recorded imports cumulated over the period 1962-1969 of 4-digit SITC commodities valued in excess of one million U.S. dollars are plotted against corresponding Japan and U.S. export data, respectively. Quite conspicuous is the large number of points which deviate significantly from the 45-degree line of exact correspondence on both sides, suggesting that relative understatement in trade data is not a monopoly of the Philippines. The scatter diagrams provide grounds for supposing that the recordings of the two DC trade partners are also subject to inaccuracy and can stand some improvement.

Most of this type of information are lost in aggregative approaches since, as borne out in Naya and Morgan (1969) which compared Philippine trade data at the 1-digit SITC level with those of its four leading trade partners, the recordings of commodity-by-country trade statistics have discrepancies much larger and of wider variation generally than those for total trade. Thus relative under-recording of

trade partner statistics at the 3-digit level will not contribute to but will reduce the discrepancy at the 1-digit level, if there is a general understatement of Philippine data at this higher level of aggregation relative to the trade partner's statistics.

The upshot of this discussion is that in cases where DC partner export data are lower than the corresponding LDC import trade statistics, it can be assumed that actual under-reporting to at least the extent of the observed discrepancies has taken place in the former, provided that there is no incentive to overvalue imports in the LDC under study. The latter does not seem to be a likely possibility in the present context in view of the highly protective Philippine tariff structure in the 1960s which gave inducement to undervalue imports.

Where there is such an understatement of DC partner data, a third method of estimating the magnitude of the LDC import flows would be to consider as more accurate the higher value from the two sources at some level of commodity disaggregation. For reasons given earlier, we make use here of the 3-digit SITC level. Philippine imports of any 3-digit commodity r from country i (i=Japan, United States) in each year may be estimated max (M^r_{pi}, X^r_{ip}) where M^r_{pi} and X^r_{ip} denote Philippine recorded r imports from i and i's recorded r exports to the Philippines, respectively. The estimate of total Philippine imports from country i in each year is then given by $\sum_r$ max (M^r_{pi}, X^r_{ip}).

Annual as well as period import ratios and partner country export ratios using such "maximum" trade values as reference figures are seen in Table 2 to demonstrate a greater degree of understatement of Philippine recording compared with those of the United States and Japan. Nevertheless, partner country data are also understated relative to the "maximum" values so that Philippine import ratios are consistently lower than those of Table 1 where DC partner data are used as reference.

It is of some interest to compare average annual growth rates during 1962-1969 suggested by the three alternative sets of import data. Based on the maximum values, Philippine imports from Japan and the United States have expanded at the rate of 21.77 and 2.80 per cent, respectively. Using partner country data, annual growth rates of imports from Japan and the United States are 21.57 and 5.35 per cent, respectively, while comparable rates are 19.57 and 4.29 per cent as implied from Philippine data. It would appear therefore that Philippine official estimates significantly overstate the increase in imports from the United States relative to the maximum values, but understate it relative to partner country recordings. On the other hand, Philippine imports from Japan appeared to have grown faster than what Philippine and partner country data sets indicate, the growth rate having been most understated in the Philippine set.

Disaggregative Comparisons

The relative shares of each commodity group (1-digit SITC) to total Philippine imports from the United States and Japan are presented in Table 3, based on Philippine as well as partner country data. In either case machinery and transport equipment (SITC 7) and manufactured goods classified chiefly by material (SITC 6) are seen to dominate consistently Philippine import trade with the two principal trading partners, contributing jointly more than three-fourths of total import flows. One notes the relatively large discrepancies between Philippine and partner country data in the percentage shares of the two principal import commodity groups.

The discrepancies of Philippine import data relative to partner country statistics for each major commodity group, represented in Table 4 by the values of import and export ratios, confirm the initial hypothesis that there is indeed a wide dispersion in commodity group recordings which disappears in the aggregation process. For instance, import figures for two commodity groups are overstated relative to both partner country data, i.e. SITC 3 and 9 for the United States and SITC 3 and 4 for Japan.

Relative to the maximum values, the observed magnitudes of export ratios of the trading partners are seen to be nearer unity generally than the comparable import ratios of the Philippines. However, taken individually, there are some commodity groups for which the reverse

is true, implying relative understatement of DC partner data. For ins-
tance, mineral fuels (SITC 3) would seem better recorded in the Philippines.

Average annual rates of increase over 1962-1969 in trade flows
of the dominant 1-digit SITC groups implied by these alternative data
sets are given in Table 5. It would appear that imports of manufactured
goods (SITC 6) from Japan and of machinery and transport equipment (SITC
both
7) from Japan and the United States have grown faster than what Philippine
data suggest. A slightly smaller negative growth rate in imports of
SITC 6 from the United States is recorded in the Philippine data set.

It remains to identify which of the commodity items especially
at the more disaggregative levels (2- and 3-digit SITC), stand out as the
major sources of observed discrepancies. While relative under-recording
is a much more extensive phenomenon than over-recording of Philippine
data, overstatement also appears at less aggregative commodity groupings.
Cumulated at the 3-digit level and over the period, imports from Japan
have been overstated by $73.53 million, somewhat less than the overstate-
ment figure of $143.78 million for the United States.

Table 6 presents the distribution of data discrepancies at the
1-digit SITC level of Philippine import recordings during 1962-1969 com-
pared with those of the two partner countries. The figures represent
amounts and percentage shares of relative understatement and overstatement
of Philippine data among 3-digit SITC commodity items cumulated for each
major commodity group. The two dominant import commodity groups SITC 6

and 7 are observed to account for 78.96 per cent of the total understate-
ment and 56.30 per cent of the total overstatement in imports from Japan,
while contributing 65.43 and 48.87 per cent to the total understatement
and overstatement, respectively, in imports from the United States.

The principal sources of discrepancies at the 2- and 3-digit
SITC levels of imports are presented in Tables 7 and 8, respectively.
Textile yarns, fabrics (SITC 65) contribute 22.05 and 18.68 per cent of
total understated import values to Japan and the United States, respect-
ively. At the 3-digit level it is mostly attributable to textile mater-
ials, woven (SITC 630) from Japan and to a large extent cotton fabrics
(SITC 652) from the United States. Iron and steel imports (SITC 67) are
the second most important source of import data under-recording in Japan,
having been accounted for mainly by universals, plates, and sheets of
iron and steel (SITC 674). Imports of machinery and transport equipment
(SITC 71, 72 and 73) likewise are major sources of understatement in
imports from both trading partners responsible jointly for about a little
over 21 per cent of under-recorded values. Main contributors at the
3-digit level are SITC 711, 718 and 729 and especially 722 for Japan and
SITC 719, 722, 729 and 734 for the United States. Cereals and cereal
preparations (SITC 04), explained mostly by wheat imports (SITC 041)
also account rather significantly for under-recorded imports from United
States.

/On the other hand overstatement of Philippine recorded imports from Japan is largely accounted for by iron and steel imports (SITC 67) because of ingots and other primary form imports (SITC 672). Again for both partner countries overstatement is large in imports of machinery and transport equipment, explaining about 22 per cent and 35 per cent of overstatement at the 2-digit level in imports from Japan and the United States, respectively. These are mostly in the form of agricultural machinery and implements (SITC 712) and metal working machinery (SITC 715) in Japan and road motor vehicles (SITC 732) for the United States. Food imports too are overstated, as in imports of fish, fresh and simply preserved (SITC 031) and cocoa (SITC 072) from Japan and the United States, respectively.

Under-recording of Imports and the Tariff Structure

The Philippine tariff system was made redundant in the 1950s by the existence·of rigorous controls on imports and foreign exchange. Gradual lifting of controls began in 1960 and was completed in 1962, ushering in a period in which tariff policy was used to influence the direction of the country's economic development. In this section we examine the hypothesis that a significant portion of the observed variation in discrepancies across commodity groups can be attributed to the tariff structure. The higher the tariff rate on individual commodities or groups of commodities, the greater the incentive to under-report the true value. It can thus be expected that imports which are

less heavily taxed will be less seriously under-recorded; they may even be relatively overstated in the importing country's statistics if the incentives to undervalue exports (due to existing export taxes) in the partner country are stronger.

It is interesting to look first at the 3-digit commodity items identified earlier (cf. Table 8a) as the principal contributors to the understatement of Philippine import data relative to the corresponding trade statistics of the two partner countries. Using the 1965 Tariff Code, we compute the average tariff rate[4/] applicable to these commodity imports to be 41.1 per cent. Among these commodity items the following have been singled out above as the most important sources of data discrepancies: SITC 653 (Textile materials, woven), 764 (Universals, plates, and sheets of iron and steel) and 722 (Electric power machinery) from Japan and SITC 652 (Cotton fabrics), 719 (Machinery and appliances, n.e.s.) and SITC 041 (Wheat) in imports from the United States. Some indication of the validity of the postulated relationship is given by the fact that these commodity imports were subject to an average tariff rate of 54.96 per cent, which is significantly higher than the corresponding figure for the larger set of commodities.

A more comprehensive test of the hypothesis that the extent of under-reporting of import transactions is influenced by the tariff rate will now be provided by the correlation of the Philippine import ratios with average tariff rates of the (2-digit SITC) commodity groups

using the standard least squares method. As presented in Table 9, two
sets of import ratios may be used, the denominator being the partner
country's recorded exports in one set and the "maximum" balues in the
other. Considering both sets in the import trade with each of the two
trade partners, the regression results are as follows:

$$I_j = 1.310 - 1.190 \text{ TR}; \qquad R = -0.602; \qquad e = -0.976$$
$$(-2.33)$$

$$I_j^m = 1.133 - 0.969 \text{ TR}; \qquad R = -0.712; \qquad e = -0.870$$
$$(-4.75)$$

$$I_{us} = 1.252 - 1.057 \text{ TR}; \qquad R = -0.665; \qquad e = -0.849$$
$$(-3.89)$$

$$I_{us}^m = 1.109 - 0.926 \text{ TR}; \qquad R = -0.774; \qquad e = -0.833$$
$$(-5.31)$$

where

I_j = Philippine import ratio in Japan trade based on
Japanese export data ($=M_{pj}/X_{jp}$)

I_j^m = Philippine import ratio in Japan trade based on
"maximum" values ($=M_{pj}/M_{jmax}$)

I_{us} = Philippine import ratio in U.S. trade based on
U.S. export data ($=M_{pus}/X_{usp}$)

I_{us}^m = Philippine import ratio in U.S. trade based on
"maximum" values ($=M_{pus}/_{usp}$)

TR = average tariff rate.

The correlation coefficient is denoted by R and the numbers
in parentheses underneath the coefficient estimates are their t-values.
Each of the estimated equations suggest a significantly negative corre-
lation between the tariff rate and the import ratio, however expressed.
The absolute values of R and the t-statistics are seen to be higher

where the import ratio is based on the "maximum" values rather than the corresponding trade partner export data. More than one-half of the variation in the import ratio across commodity groups is explained by the variation in tariff rates in three of the four estimated equations.

Computed values of the elasticity of the import ratio with respect to the tariff rate (denoted by e) are also given above at the mean values of the variables. They range from -0.833 to -0.976, suggesting a rather significant effect on the pattern of understatement of Philippine import data of the variation in tariff rates across commodity groups. Thus if the "maximum" values are taken to represent the correct magnitudes of trade flows, commodities whose tariff rates are higher by 10 per cent have had their import flows from Japan during 1962-1969 under-recorded in Philippine trade statistics by 8.70 per cent more and in imports from the United States by 8.33 per cent. If valid for interpretation in a temporal context, such percentage increases in the undervaluation of imports to be expected from a 10 per cent rise in the average tariff rate leave very little scope indeed for the generation of additional government revenues.

TABLE 1: Philippine Import Trade With the United States and Japan, 1962-1969
(f.o.b. value in thousand U.S. dollars)

Country	Year	Imports from country i (M_{pi})	Exports of country i (X_{ip})	Difference $(X_{ip} - M_{pi})$	Import Ratio M_{pi}/X_{ip}
United States	1962	252,337	266,189	13,852	0.948
	1963	253,839	319,748	65,909	0.794
	1964	301,477	356,497	55,020	0.846
	1965	274,466	332,646	58,180	0.825
	1966	281,950	338,038	56,088	0.834
	1967	363,873	417,745	53,872	0.871
	1968	372,442	424,230	51,788	0.878
	1969	316,975	368,923	46,948	0.871
	1962-69	2,417,359	2,819,016	401,572	0.858
Japan	1962	106,354	120,010	13,656	0.886
	1963	95,768	146,657	50,889	0.653
	1964	158,212	190,794	32,582	0.829
	1965	195,978	240,265	44,287	0.816
	1966	245,027	278,256	33,229	0.881
	1967	288,756	362,899	74,143	0.796
	1968	321,871	411,086	89,215	0.783
	1969	335,432	475,603	140,171	0.705
	1962-69	1,747,398	2,225,570	478,181	0.785

Source of basic data: United Nations, Commodity Trade Statistics.
Bureau of the Census and Statistics, Foreign Trade
Statistics of the Philippines.

TABLE 2: "Maximum" Import Values (M_{imax}) and Ratios of M_{pi} and X_{ip} to M_{imax}, 1962-19

Country	Year	M_{imax} (f.o.b. value in thousand U.S. $)	Import ratios (M_{pi}/M_{imax})	Export rati (X_{ip}/M_{imax})
United States	1962	303,767	0.831	0.876
	1963	339,275	0.748	0.942
	1964	380,554	0.792	0.937
	1965	362,188	0.758	0.918
	1966	359,611	0.784	0.940
	1967	449,272	0.810	0.930
	1968	462,116	0.806	0.918
	1969	385,823	0.822	0.943
	1962-69	3,042,606	0.795	0.927
Japan	1962	130,804	0.813	0.917
	1963	156,487	0.612	0.937
	1964	205,186	0.771	0.930
	1965	256,837	0.763	0.935
	1966	303,606	0.807	0.917
	1967	381,102	0.758	0.952
	1968	440,229	0.731	0.934
	1969	507,916	0.660	0.936
	1962-69	2,382,167	0.734	0.934

TABLE 3: Distribution of Philippine Imports by Major Commodity Group, 1962-69 (in per cent)

SITC No.	Name	Philippine imports from the Phil. (M_{pus})	U.S. exports to the Phil. (X_{usp})	Philippine imports from Japan (M_{pj})	Japan exports to the Phil. (X_{jp})
0	Food and live animals	13.57	14.61	6.29	5.07
1	Beverages and tobacco	1.04	0.98	.00	0.01
2	Crude materials	8.59	7.42	4.82	3.85
3	Mineral fuels	2.38	1.90	.86	0.59
4	Animal and vegetable oils	0.52	0.54	.11	0.05
5	Chemicals	9.76	9.04	8.80	8.28
6	Manufactured goods classified chiefly by material	14.52	19.26	36.36	41.55
7	Machinery and transport equipment	43.64	39.98	39.99	36.11
8	Miscellaneous manufactured articles	3.58	5.05	2.49	3.86
9	Commodities and transactions not classified according to kind	2.41	1.22	.26	0.63
T o t a l		100.00	100.00	100.00	100.00

TABLE 4: Import and Export Ratios by Major Commodity Group

Country	SITC Code	M_{pi}/X_{pi}	M_{pi}/M_{imax}	X_{ip}/M_{imax}
United States	0	0.797	0.742	0.932
	1	0.908	0.846	0.932
	2	0.993	0.891	0.898
	3	1.074	0.974	0.907
	4	0.820	0.721	0.879
	5	0.925	0.842	0.910
	6	0.647	0.621	0.960
	7	0.936	0.871	0.931
	8	0.607	0.600	0.989
	9	1.691	0.954	0.564
	Total	0.858	0.795	0.927
Japan	0	0.974	0.886	0.909
	1	0.305	0.305	1.000
	2	0.983	0.888	0.904
	3	1.141	0.971	0.851
	4	1.854	0.936	0.505
	5	0.835	0.786	0.941
	6	0.687	0.662	0.964
	7	0.870	0.787	0.905
	8	0.506	0.496	0.980
	9	0.328	0.310	0.947
	Total	0.785	0.734	0.934

TABLE 5: Average Annual Growth Rates of Selected Philippine Import Flows, 1962-1969 (in per cent)

Country	SITC No.	Based on		
		Philippine data	Trade partner data	"Maximum" values
Japan	6	17.44	20.06	20.58
	7	24.30	29.38	26.49
U.S.	6	-1.53	-1.54	-2.16
	7	1.37	9.07	7.82

TABLE 6: Relative Understatement and Overstatement of Philippine Import
Data by Major Commodity Group, 1962-1969

SITC NO.	Imports from	Understatement		Overstatement	
		$ thousand	Per cent	$ thousand	Per cent
0	Japan	12,161	2.21	9,240	12.56
	U.S.	99,239	17.98	15,646	10.89
1	Japan	153	.03	-	-
	U.S.	2,547	.46	-	-
2	Japan	10,049	1.82	8,597	11.67
	U.S.	18,672	3.38	17,189	11.95
3	Japan	95	.02	11,951	2.66
	U.S.	4,548	.82	1,375	.96
4	Japan	48	.00	910	1.24
	U.S.	4,185	.76	1,431	.99
5	Japan	23,995	7.43	10,691	14.54
	U.S.	31,949	5.78	12,860	8.93
6	Japan	314,705	57.05	25,281	34.40
	U.S.	209,154	37.90	17,678	12.29
7	Japan	120,831	21.91	16,104	21.90
	U.S.	124,394	22.53	52,579	36.58
8	Japan	43,108	7.82	668	.91
	U.S.	56,116	10.17	166	.12
9	Japan	52,569	1.72	91	.12
	U.S.	1,073	.19	24,852	17.28
Total	Japan	577,714	100.00	73,533	100.00
	U.S.	551,877	100.00	143,852	100.00

TABLE 7a: Ten Principal Sources of Relative Understatement of Philippine Import Data at the 2-digit level, 1962-1969

SITC No.	Commodity description	$ thousand	Per cent
I. Imports from Japan			
51	Chemical elements and compounds	16,988	3.08
58	Plastic materials	17,448	3.16
65	Textile yarns, fabrics	121,681	22.05
66	Non-metallic mineral, manufactured, n.e.s.	27,751	5.03
67	Iron and steel	108,616	19.69
69	Manufactures of metal, n.e.s.	44,562	8.09
71	Machinery, other than electric	31,585	5.72
72	Electrical machinery	63,707	11.56
73	Transport equipment	25,539	4.63
89	Miscellaneous manufactures, n.e.s.	26,639	4.82
	TOTAL	484,516	87,83
II. Imports from the United States			
04	Cereals and cereal preparations	65,106	11.80
51	Chemical elements and compounds	12,789	2.31
61	Leather, leather manufactures	41,950	7.60
65	Textile yarns, fabrics	102,991	18.68
69	Manufactures of metal, n.e.s.	22,929	4.15
71	Machinery other than electric	73,829	13.38
72	Electrical machinery	29,661	5.37
73	Transport equipment	20,904	3.78
84	Clothing	17.937	3.25
89	Miscellaneous manufactures, n.e.s	22,552	4.09
	TOTAL	410,648	74.41

TABLE 7b: Ten Principal Sources of Relative Overstatement of Philippine Import Data at the 2-digit level, 1962-1969

SITC No.	Commodity description	$ thousand	Per cent
I. Imports from Japan			
03	Fish and fish preparations	6,530	8.88
07	Coffee, tea, etc. & manufactures thereof	2,041	2.77
27	Crude fertilizers and crude minerals	2,024	2.75
28	Metalliferous and metal scrap	4,270	5.80
33	Petroleum and petroleum products	1,950	2.66
59	Chemical materials and products, n.e.s.	9,187	12.49
67	Iron and steel	21,588	29.38
68	Non-ferrous metals	3,282	4.46
71	Machinery other than electric	13,132	17.86
73	Transport equipment	2,972	4.04
	TOTAL	66,977	91.09
II. Imports from the United States			
07	Coffee, tea, etc. & manufactures thereof	12,123	8.43
26	Textile fibres	4,100	2.84
28	Metalliferous ores and metal scrap	6,238	4.34
29	Crude animal & veg. materials, n.e.s.	4,911	3.42
59	Chemical materials & products, n.e.s.	5,122	3.56
64	Paper, paperboard & manufactures thereof	5,953	4.14
68	Non-ferrous metals	8,412	5.85
72	Electrical machinery	6,887	4.80
73	Transport equipment	44,562	30.99
93	Special transactions	23,842	16.58
	TOTAL	122,150	84.95

TABLE 8a: Ten Principal Sources of Relative Understatement of Philippine Import Data at the 3-digit level, 1962-1969

SITC No.	Commodity description	$ thousand	Per cent
I. Imports from Japan			
512	Organic chemicals	15,152	2.75
581	Plastic materials	17,448	3.16
653	Textile materials, woven	106,543	19.32
666	Pottery	12,882	2.34
674	Universals, plates & sheets of iron and steel	84,415	15.30
711	Power generating machineries	17,107	3.10
719	Machinery & appliances, n.e.s.	12,976	2.35
722	Electric power machinery	29,123	5.28
729	Other electric machinery & apparatus	17,306	3.14
734	Aircraft	18,975	3.44
	TOTAL	331,927	60.18
II. Imports from the United States			
041	Wheat	43,774	7.93
641	Leather	11,854	2.15
651	Textile yarn and thread	13,057	2.37
652	Cotton fabrics	47,721	8.65
653	Textile fabrics, woven	24,937	4.52
719	Machinery & appliances, n.e.s.	51,678	9.36
722	Electric power machinery	15,268	2.77
729	Other electric machinery & apparatus	12,494	2.26
734	Aircraft	19,667	3.56
841	Clothing of textile fabrics	16,574	3.00
	TOTAL	257,024	46.57

TABLE 8b: Ten Principal Sources of Relative Overstatement of Philippine Import Data at the 3-digit level, 1962-1969

SITC No.	Commodity description	$ thousand	Per cent
I. Imports from Japan			
031	Fish, fresh and simply preserved	6,530	8.88
072	Cocoa	2,022	2.75
284	Non-ferrous metal scrap	4,099	5.57
332	Petroleum products	1,931	2.63
599	Chemical materials and products, n.e.s.	9,187	12.49
672	Ingots and other primary forms	20,595	28.03
687	Tin	2,352	3.20
712	Agricultural machinery and implements	3,004	4.09
715	Metal working machinery	9,577	13.02
731	Railway vehicles	1,596	2.17
	TOTAL	60,892	82.83
II. Imports from the United States			
072	Cocoa	11,920	8.29
263	Cotton	3,872	2.69
284	Non-ferrous metal scrap	6,228	4.33
292	Crude vegetable materials, n.e.s.	4,911	3.52
514	Other inorganic chemicals	3,640	2.53
599	Chemical materials and products	5,122	3.56
642	Articles made of paper pulp	5,953	4.14
723	Equipment for distributing electricity	4,983	3.47
732	Road motor vehicles	41,683	28.99
931	Special transactions	23,842	16.58
	TOTAL	112,154	78.00

TABLE 9: Philippine Import Ratios and Average Tariff Rates by Commodity Groups

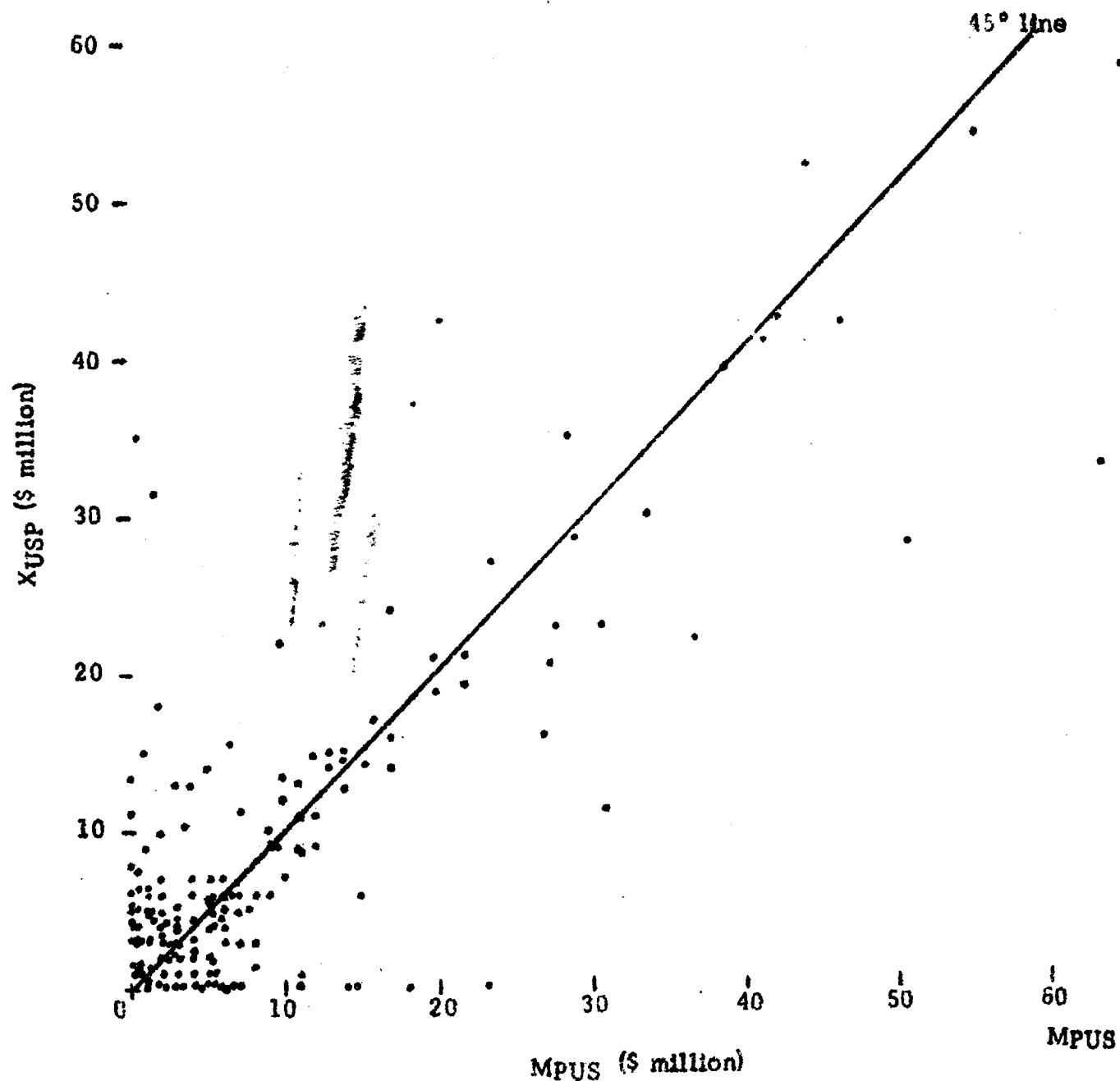| SITC No. | Imports from Japan | | Imports from the U.S. | | Average Tariff rate |
	M_{pj}/X_{jp}	M_{pj}/M_{max}	M_{pus}/X_{usp}	M_{pus}/M_{max}	
00	0.220	0.219	0.345	0.345	.600
01	0.897	0.685	0.428	0.410	.610
02	2.338	0.994	0.933	0.825	.388
03	0.917	0.896	0.963	0.785	.587
04	0.943	0.851	0.731	0.717	.358
05	0.917	0.875	0.875	0.809	.723
06	0.201	0.198	0.118	0.118	1.033
07	-	0.976	1.602	0.718	.635
08	0.929	0.938	0.837	0.791	.257
09	0.453	0.427	0.699	0.677	.544
61	0.278	0.262	0.068	0.068	.639
62	0.817	0.814	0.715	0.673	.459
63	0.215	0.206	0.489	0.424	.880
64	0.905	0.905	0.938	0.950	.442
65	0.456	0.443	0.470	0.458	.577
66	0.482	0.478	0.738	0.715	.418
67	0.793	0.752	0.807	0.726	.360
68	1.024	0.948	1.188	0.897	.261
69	0.610	0.608	0.707	0.689	.460
71	0.952	1.076	0.882	0.855	.223
72	0.563	0.548	0.890	0.845	.374
73	0.917	0.840	1.074	0.918	.411
81	0.618	0.558	0.632	0.630	.388
82	0.471	0.459	0.442	0.442	.670
83	0.109	0.109	0.176	0.176	1.000
84	0.231	0.231	0.071	0.070	.850
85	0.178	0.178	0.391	0.387	.740
86	0.672	0.671	0.770	0.768	.252
89	0.447	0.435	0.669	0.655	.639

Figure 1: Scatter diagram of Philippine imports from Japan (Mpj) and
Japanese exports to the Philippines (Xjp): 4-digit SITC totals
for 1962-1969, $1 million and over.
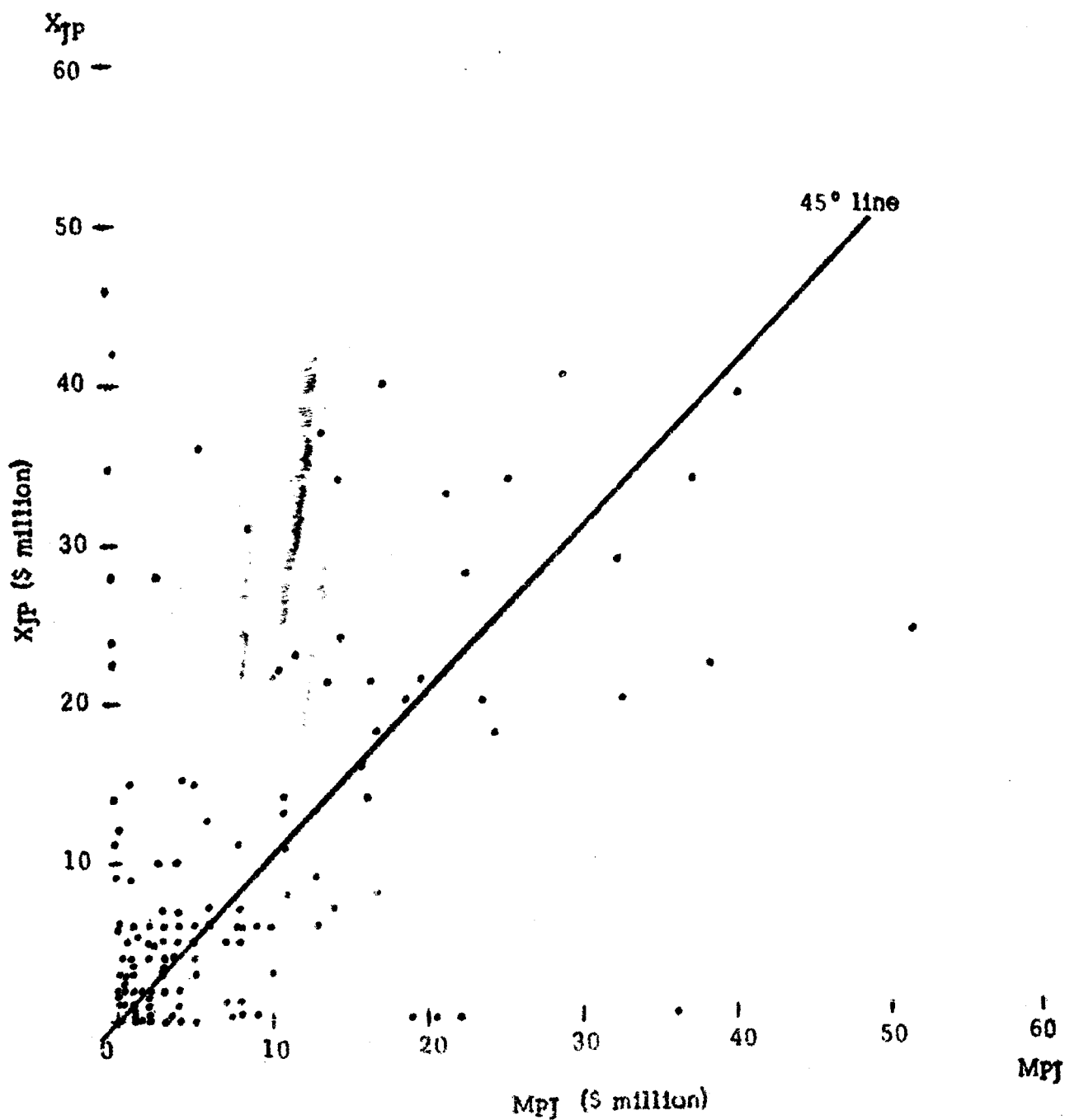
Figure 2: Scatter diagram of Philippine imports from the United States (M_{PUS}) and U.S. exports to the Philippines (X_{USP}): 4-digit SITC totals for 1962-1969, $1 million and over.

F O O T N O T E S

[1]One notable exception is the work of Hicks and McNicoll (1971)
in which a revised set of estimates of annual export and import flows is
presented based on an aggregative examination of bilateral trade record-
ings of the Philippines and the five leading trade partners over the
period 1950-1965.

[2]This is illustrated by the bilateral recordings of sugar ex-
ports to the United States: from 1962 to 1966 both Philippine and U.S.
data show SITC 0611 (Centrifugal sugar) to have much higher values (about
ten times) compared to SITC 0612 (Refined sugar); for the years 1967,
1968 and 1969, however, the relative magnitudes of the two 4-digit commo-
dities get reversed in U.S. recorded statistics, representing a clear
case of commodity misclassification.

[3]Assuming that the Philippines records imports by country of
production, total imports of the Philippines of commodity r (M^r_{pi}) con-
sist of direct imports and indirect imports from i passing through a
third country k ($D^r_{pi} + S^r_{pi}$). Similarly, i's exports to the Philippines
(X^r_{ip}) are made up of exports produced in i and re-exports ($D^r_{ip} + R^r_{ip}$),
if countries record exports and re-exports by country of last consign-
ment. Since only a portion of the Philippines' imports of r from i
can be considered identical with a subset of i's exports to the
Philippines, then the bilateral (import) ratio

$$\frac{M^r_{pi}}{X^r_{ip}} = \frac{D^r_{pi} + S^r_{pi}}{D^r_{ip} + R^r_{ip}}$$

need not be equal to one.

[4]Computed as the simple arithmetic average of tariff rates on commodity imports at the 5-digit SITC level. (Excluded from the computations are duties expressed in pesos per unit of weight or volume.) The simple average is used because weighted average tariff rates (i.e. weighted by the value of imports) tend to be understated since heavily taxed commodities are assigned relatively smaller weights which is due at least in part to the prohibitive nature of the tax.

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