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Discussion Paper

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DISCUSSION PAPER

NO. 8502

Why the EEC-ROC Trade Remains Unimportant ? *

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February 1985

*This paper has been presented at the 1st Conference on European Studies, on Sept. 7-9, 1984, at Tamkang University, Taipei, under the title: "Trade Relation between the European Communities and the Republic of China". Valuable comments from participants of the conference were very helpful in making this paper more readable. Responsibility for errors remain is solely that of the author.

Why the EEC-ROC Trade Remains Unimportant ?

I Introduction and Summary

The purpose of this paper is to look for the factors that determine the bilateral trade between the EEC and Taiwan. The motivation for writing this paper comes from the evidence that Taiwan's trade with the EEC countries remains relatively unimportant, even though for many years we have striven to expand this trade. It is therefore worthwhile to review the extent of this trade over the last ten to twenty years in order to weigh the gains and losses of our trade strategy.

Table 1 provides a prelimenary comparison of Taiwan's trade with the USA and with the EEC. It is obvious from this table that the Common Market has a greater population, a greater GNP value, and a greater external trade volume. However, trade with this market comprised only 11% of our total trade in 1979. This was only about 1/3 of the figure with the USA. This could, therefore, be an indication that much remains to be done in order to reach our elusive goal.

We can use three approaches to explain this phenomena. Explanation 1 uses the distribution of Taiwan's trade, in which we shall see the small share of the EEC in Taiwan's total trade.

Table 1

Comparison of Trade with the USA and with the EEC (1979)

	Population	GNP	Total Trade	Share of Taiwan's total Trade
USA	220 mil.	2116 bil. $	397 bil. $	29%
EEC	259 mil.	2167 bil. $	564 bil. $	11%

Note: Intra-EEC trade is not included.
Sources: Taiwan, Council for Economic Planning & Development, Statistical Data Book, 1982; and
Taiwan, Ministry of Finance, Dept. of Statistics, Monthly Bulletin of Imports and Exports, Jan. 1984.

Explanation 2 uses the coefficients of concentration. We shall see that Taiwan has fewer trading partners than an open country like Germany. Much more serious is that Taiwan concentrates its trade with only a few countries. This is why Taiwan has coefficients of concentration that are as high as ten times those of West Germany. These coefficients can also tell us that Taiwan, on the other hand, is actually on road to improvement, although improvement on the export side is much more significant tha on the import side. This reflects again the success of export promotion. the success of export promotion.

Explanation 3 builds an econometric model, in which the factors affecting this trade can be assessed and the magnitude of their effects can

be estimated. Following the traditional method we shall test the influence of income and prices on trade. But in a departure from the tradition, we shall test domestic and foreign prices separately.[1] Another departure is the use of two-maximization. This is explained below.

Usually, we assume income can influence bilateral trade. Without directly rejecting this practice, we assume income influences total imports, which then exert their effect on the imports from the partner country. The reason for adopting this approach is that income elasticity always fluctuates around unity.[2] As we use this approach, we shall see that this remains true, but our estimation shall break down this income effect. That is,

Income Effect on Bilateral Trade (Income Effect)	=	Income Effect on Total Imports (T-Effect)	·	Total Imports Effect on Bilateral Trade (B-Effect)

Thus, instead of a single income effect, we have an income effect on total imports, and total imports influencing on bilateral trade. For simplification, let us call the former effect the T-effect and the latter one, the B-effect.

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[1] When domestic and foreign prices are forced to form one single explanatory variable, it is called relative price.

[2] This induces many economists to use the homothetic function, where income (activity) elasticity is certainly one.

As we shall see, different magnitudes of the separated elasticities imply different circumstances. For example, a great T-effect would signify a tight relation between domestic fluctuation and trade policy, and a great B-effect would imply a strict trade policy against a particular trading partner.

The results of the estimation will tell us that the EEC countries have a small T-effect on their total imports but a great B-effect on the products from Taiwan. On the other hand, Taiwan has a great T-effect but a small B-effect. This finding is not possible with the traditional method.

We shall also observe that our products face keen competition from products of other countries in the EEC market, whereas the EEC products are mostly complementary goods.

After having provided these three explanations, we shall conclude our report with some policy implications in Section V.

II Explanation 1 — Distribution of the Taiwan's Trade

Over the last 20 years (1960 to 1980) bilateral trade between Taiwan and the EEC has grown from US$22 mil. to US$3866 mil. The average annual growth rate has been 31%, which is much higher than the average growth rate of either the total trade of Taiwan or that of the EEC. Figures for the bilateral trade are displayed in Table 2 and Fig. 1.

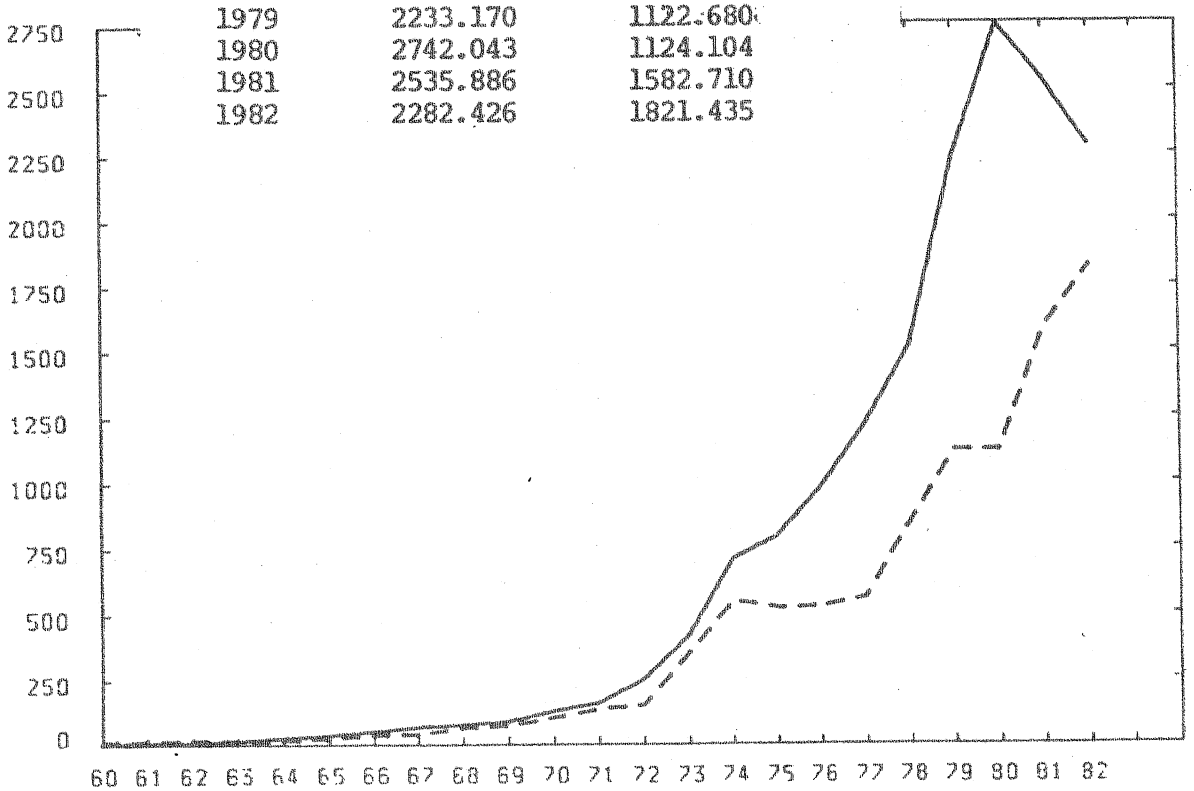
The distribution of Taiwan's trade today is indeed quite different from what it was 20 years ago. This can be perceived from Tables 3 and 4 and Figures 2 and 3. We may observe from Table 3 that import dependence on the USA has indeed declined, but import dependence on Japan remains substantial. The smallest share of Japan's imports in Taiwan's total imports was 29.7% in 1963, but in 1979 Japan's share was still 30.9%. On the export side, there was merely a shift of the preponderant share from Japan to the USA. Thus, all in all, The ROC's trade dependence on the two trade "superpowers" is still obvious.

This is one of the reasons why the trade share of the EEC remains relatively small, i.e., not enough effort has been made to promote a more even distribution of our commodities in the world markets. A second reason we shall discuss is the over-emphasized policy of export promotion, in which imports are relatively discriminated against.

This latter point can be seen clearly. In the first place, it is commonly known that Taiwan has had an overall export surplus for years. This is also true for the bilateral trade under consideration. Second, the import share of the EEC, as indicated in Table 3, has not changed much. It was 8.4% in 1960 and 9.7% in 1979. On the other hand, the share of Taiwan's exports to the EEC in total exports has increased steadily. It rose from 5.8% in 1960 to 12.6% in 1979. We do not mean that export promotion is wrong, but just want to indicate that imports should also receive adequate attention.

Table 2 and Fig. 1: Bilateral Trade between EEC and the ROC.

YEAR	MEGT	XEGT
1960	7.270	15.430
1961	8.970	19.240
1962	12.630	21.450
1963	19.240	17.160
1964	29.970	21.010
1965	38.140	27.080
1966	53.160	40.310
1967	70.320	45.480
1968	80.410	68.560
1969	92.330	76.680
1970	132.400	105.740
1971	164.780	141.020
1972	252.350	154.840
1973	422.430	354.720
1974	711.200	547.710
1975	798.050	522.820
1976	980.100	530.190
1977	1221.820	565.950
1978	1518.470	849.710
1979	2233.170	1122.680
1980	2742.043	1124.104
1981	2535.886	1582.710
1982	2282.426	1821.435



Note: MEGT is the EEC's imports from Taiwan, and XEGT is Taiwan's imports from the EEC.

Sources: For 1960-1980, EEC, Analytical Tables of Foreign Trade, the Statistical Office of the European Community, Luxemburg, various issues.
For 1981-1982, Taiwan, Monthly Bulletin of Imports and Exports, Department of Statistics, Ministry of Finance, Taipei, various issues.

Table 3

Geographical Structure of Trade: Taiwan's Imports

Unit: %

YEAR	Distribution of Taiwan's Trade: Imports from The USA	Japan	S.E. Asia
60	38.112	35.331	4.766
61	40.620	30.968	6.018
62	37.948	34.148	6.142
63	41.621	29.661	6.457
64	32.477	34.799	8.428
65	31.721	39.805	6.376
66	26.726	40.401	7.679
67	30.689	40.461	7.877
68	26.514	40.033	9.056
69	24.053	44.188	8.666
70	23.876	42.837	9.882
71	22.135	44.851	9.070
72	21.620	41.615	10.309
73	25.116	37.645	11.692
74	24.117	31.798	10.396
75	27.759	30.449	8.384
76	23.655	32.261	8.952
77	23.075	31.054	11.618
78	21.548	33.355	9.427
79	22.884	30.875	9.716

YEAR	Distribution of Taiwan's Trade: Imports from The EEC	Germany	Rest of the World
60	8.357	3.818	13.434
61	8.180	4.104	14.214
62	7.194	3.513	14.568
63	6.297	3.009	15.964
64	7.501	3.779	16.715
65	7.186	3.074	14.912
66	7.643	3.853	17.551
67	8.207	4.107	12.766
68	8.556	4.055	15.841
69	8.155	4.004	14.933
70	8.326	4.062	15.079
71	9.570	4.342	14.874
72	7.987	3.642	18.369
73	10.544	5.360	15.073
74	12.743	6.612	20.946
75	11.387	6.242	22.021
76	9.613	4.635	25.519
77	8.671	3.254	25.582
78	9.675	3.735	25.995
79	9.748	4.302	26.777

Note: The EEC includes 9 member-countries, and S.E. Asia includes the 5 member-countries of the ASEAN, Hongkong and S. Korea.

Source: Taiwan, Monthly Bulletin of Imports and Exports, op. cit..

Table 4

Geographical Structure of Trade: Taiwan's Exports

Unit: %

YEAR	Distribution of Taiwan's Trade: Exports to		
	The USA	Japan	S.E. Asia
60	11.497	37.666	25.098
61	21.921	28.955	26.979
62	24.366	23.853	25.847
63	16.250	31.690	24.082
64	18.625	30.859	18.589
65	21.277	30.599	15.926
66	21.609	24.025	16.653
67	26.191	17.893	21.982
68	35.251	16.205	21.056
69	38.027	15.017	19.592
70	38.083	14.555	19.285
71	41.701	11.892	17.165
72	41.876	12.608	16.774
73	37.407	18.374	16.081
74	36.117	14.967	16.545
75	34.334	13.077	18.734
76	37.210	13.405	16.281
77	38.845	11.966	15.648
78	39.492	12.377	15.899
79	35.100	13.983	16.454

YEAR	Distribution of Taiwan's Trade: Exports to		
	The EEC	Germany	Rest of the World
60	5.829	1.998	19.910
61	7.894	2.887	14.251
62	8.586	4.758	17.348
63	8.333	4.063	19.645
64	7.256	3.898	24.671
65	9.972	6.566	22.226
66	9.235	5.507	28.478
67	9.929	5.862	24.006
68	8.679	5.804	18.809
69	9.216	5.158	18.148
70	9.478	4.793	18.599
71	9.287	4.258	19.955
72	10.518	4.527	18.224
73	11.848	4.802	16.290
74	13.327	5.432	19.044
75	13.695	5.957	20.160
76	11.606	5.169	21.499
77	11.906	4.458	21.635
78	11.475	4.512	20.757
79	12.595	4.611	21.868

Note and Source: See Table 3.

Fig. 2

Geographical Structure of Trade: Taiwan's Imports

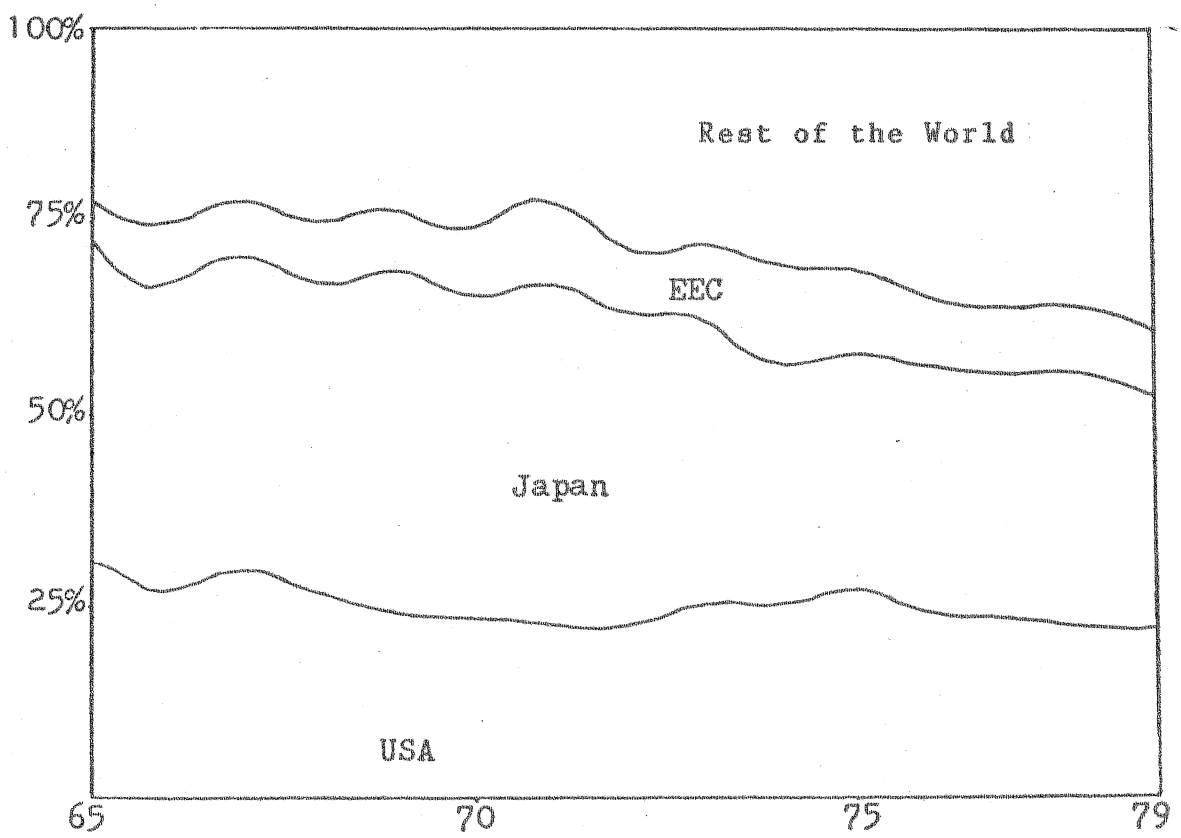
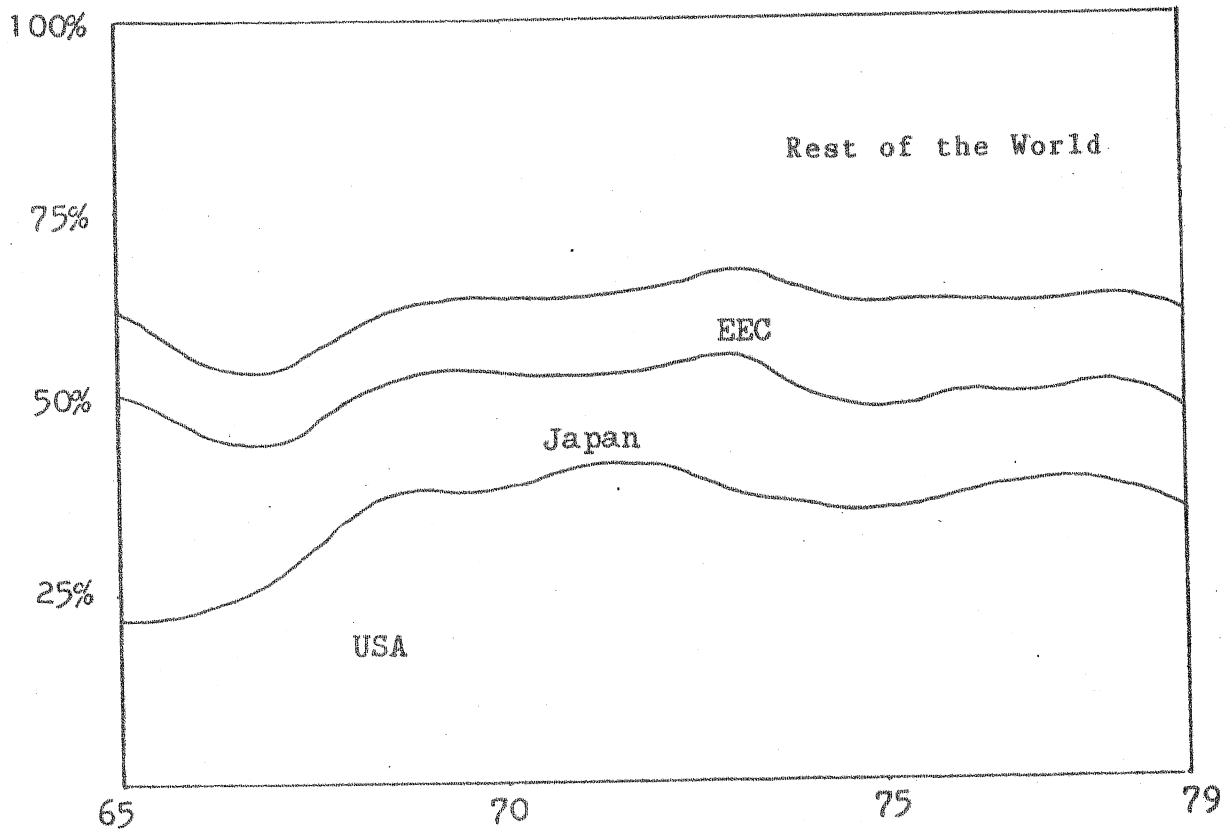


Fig. 3

Geographical Structure of Trade: Taiwan's Exports



III Explanation 2 — Coefficients of Concentration

We shall continue from explanation I and develop further results along this line with a more sophisticated method, a measure of concentration. We first gather data on Taiwan's trade (imports and exports) with numerous countries. This enables us to calculate the concentration coefficients. These coefficients illustrate the extent of Taiwan's effort to distribute more evenly trade in the world markets.

We discuss the methodology for deriving these coefficients of concentration in the next sub-section, and give the results of the calculations in subsection III.2. Readers interested only in figures and implications may turn directly to III.2.

III.1 Method of Measuring Concentration

A simple measure of concentration is the mean sum of square, MSS:

$$MSS = \sqrt{\frac{a_i^2}{A}}$$

where a_i's are values of trade (imports or exports) with the ith partner,

and

A is the total trade.

This is a measure used in sme of the literature on economic

development, e.g., Liang (1972). However, a serious shortcoming of this measure is that no definite range of lower and upper limits can be identified.

Another simple measure is the standard deviation, s:

$$s = \sqrt{\frac{1}{n-1} \sum (a_i - \bar{a})^2}$$

The lower limit (i.e., when all a_i's are of equal value) of this measure is zero, while the upper limit is equal to $(n\bar{a}^2)^{1/2}$.

A third measure is called the relative standard deviation, v:

$$v = s / \bar{a}$$

This is an improvement over s, for due to this arrangement, v ranges from 0 to n. However, sometimes one may wish to have a measure which can range from 0 to 1 (or 0 to 100 percent). Hirschman (1969) made use of v and developed another measure. Let us call this Hirschman coefficient, h, where

$$h^2 = \frac{v^2}{n} + \frac{1}{n}$$

If n approaches infinity, then this measure ranges from zero to one. In usual cases, it ranges from $(1/n)^{1/2}$ to $(1 + 1/n)^{1/2}$. Thus, this

coefficient over-estimates the seriousness of concentration.

Actually, a measure of $\frac{V}{n}^2$ is enough for most needs. Our measure for the calculation below is an improvement over h in the direction of this value. Let us call this coefficient of concentration, c, where

$$c = \frac{h - (1/n)^{1/2}}{1 - (1/n)^{1/2}}$$

This measure does have a lower limit of zero, while the upper limit is

$$\frac{\sqrt{1 + \frac{1}{n}} - \sqrt{\frac{1}{n}}}{1 - \sqrt{\frac{1}{n}}}$$

which approaches 1 when n approaches infinity. Thus this coefficient avoids the defect of h, where the figures are biased upward.

III.2 Support Derived from the Coefficients

Let us restate our measure of concentration as follows:

$$c = \frac{h - (1/n)^{1/2}}{1 - (1/n)^{1/2}}$$

where h is the Hirschman coefficient. It can be proved that c ranges from zero to one. A zero value of c means completely even distribution, when the values of the series a_i are all equal. 1 (or 100%) represents absolute concentration. Thus in our results, the smaller the coefficients the better they are in the sense that Taiwan's trade with the world would not be concentrated in a few countries.

We use the data from the IMF data bank. In order to make our results comparable, we also compute the German data. We can find 29 trading partners for Taiwan's exports for which there is sufficient time-series data, and 33 for imports; whereas there are 86 trading partners for German exports and 79 for imports.

The elementary series, a_i, is the share of the exports (or imports) in the importing (exporting) countries. This rescaling allows our data to meet the condition that if Taiwan's exports (imports) are distributed exactly like the world's imports (exports), the coefficient of concentration will be zero.

Due to data constraints, we calculate only up to the year 1978. The concentration coefficients are listed in Tables 5 and 6. We observe the

following important results:

1. Taiwan's trade is much more concentrated geographically than German trade.
2. The seriousness of this concentration was reduced for exports from 1960 to 1978.
3. The coefficient of concentration for imports declined from 1960 to 1973, but then rose again.
4. In 1960, the coefficient for exports was higher than that for imports, but the opposite was true in 1978.

These point to the fact that the ROC not only has encouraged exports, but has also managed to explore new markets and to distribute its products more widely to the world. On the imports side, attempts to explore new sources might have been frustrated by the oil crisis in 1973.

IV Explanation 3 — Trade Model

A trade model can tell us the factors affecting trade and the intensity of their influence. We can also observe from the estimation results some traces of the policies (domestic and trade policies) exercised.

Since trade models could be a separate topic[3], we shall report this model only very concisely below.

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[3]See, for example, Choi (1983).

Table 5

Geographical Concentration of German Trade

Year	Export	Import
1960	0.0475391	0.0281180
1961	0.0459219	0.0292242
1962	0.0307716	0.0270947
1963	0.0300341	0.0218606
1964	0.0244992	0.0270151
1965	0.0260073	0.0338056
1966	0.0313517	0.0357084
1967	0.0329991	0.0437379
1968	0.0413098	0.0426980
1969	0.0465037	0.0318251
1970	0.0377720	0.0347958
1971	0.0349303	0.0343265
1972	0.0392589	0.0313731
1973	0.0339667	0.0329266
1974	0.0313011	0.0354322
1975	0.0324786	0.0370256
1976	0.0374445	0.0319151
1977	0.0344520	0.0335328
1978	0.0320716	0.0700606
no. of countries considered	86	79

Note: Calculation is based on data from
the data bank of the IMF:
(1) Directory of Trade, and
(2) International Monetary Statistics.

Table 6

Geographical Concentration of Taiwan's Trade

Year	Export	Import
1960	0.2318487	0.2040661
1961	0.2683472	0.2043388
1962	0.2453660	0.2139477
1963	0.1929859	0.2455305
1964	0.1708491	0.2175378
1965	0.1705595	0.2338265
1966	0.1632750	0.2034203
1967	0.1830636	0.1793516
1968	0.1882499	0.2279708
1969	0.1896637	0.1724138
1970	0.1994091	0.1889951
1971	0.1520352	0.1501628
1972	0.1625480	0.1361860
1973	0.1414951	0.1326510
1974	0.1675977	0.1695229
1975	0.1560973	0.1559572
1976	0.1600574	0.1836401
1977	0.1432378	0.1563187
1978	0.1325743	0.1745670
no. of countries considered	29	33

Note: See Table 5

IV.1 The Model

We split the bilateral trade into two parts: the EEC's imports from Taiwan (MEGT) and Taiwan's imports from the EEC (XEGT). For each part we use disaggregated data at the SITC 1-digit level. For each 1-digit commodity group we have two estimation equations and two definitional ones.

$$(1) \qquad MR_i = a_{1i}(Y/P_y)^{a_{2i}}(P_y/Pm_i)^{a_{3i}}(Pd_i/Pm_i)^{a_{4i}} \quad ,$$

$$(2) \qquad M_i = MR_i Pm_i \quad ,$$

$$(3) \qquad X_i = b_{1i}\frac{M_i}{Pxa_i} + b_{2i}\frac{M_i^2}{Pxa_i Pxr_i} \quad ,$$

$$(4) \qquad XV_i = X_i Pxa_i \quad ,$$

where, for MEGT as an example,

MR_i is the EEC's total imports of commodity group i,

M_i is its nominal value,

X_i is Taiwan's exports to the EEC of group i,

XV_i is its nominal value,

Pm_i is the price of MR_i,

Pxa_i is the price of X_i,

Pxr_i is the price of EEC's imports from other countries,

Y is the GNP of the EEC,

P_y is the GNP deflator, and

PD_i is the corresponding domestic price of i.

One may note that we use a two-stage process to determine bilateral imports, X_i. In the first stage, we determine the total imports, M_i, which is then used to determine the bilateral imports of the same group, X_i.

The reason for adopting this two-stage approach is given in Section I. In short, this approach provides more information than a direct estimation of X_i with domestic variables, like GNP.

The estimation results are listed in Tables 11-14.

3.2 Support Derived from the Model

Tables 7 to 10 list the various elasticities calculated from the model. They are

Table 7 Activity Effect of MEGT,

Table 8 Activity Effect of XEGT,

Table 9 Price Effect of MEGT, and

Table 10 Price Effect of XEGT.

The T-effect in Tables 7 and 8 is the income effect on total imports. The figures are elasticities:

$$\text{T-effect} = \frac{\partial \ln MR_i}{\partial \ln y} \quad , \quad \text{for all } i,$$

where y is the real GNP of the importing country.

The B-effect is the total import effect on bilateral imports, i.e.,

$$\text{B-effect} = \frac{\partial \ln X_i}{\partial \ln MR_i} \quad , \quad \text{for all } i,$$

where X_i is the imports of group i from the partner country.

The third part of Table 7 is the multiplication of the first two. That is, the income effect on bilateral imports:

$$\frac{\partial \ln X_i}{\partial \ln y} \quad , \quad \text{for all } i,$$

$$= \text{T-effect} \cdot \text{B-effect} \quad .$$

The T-effect figures are derived from Equation (1), while those for the B-effect are derived from Equation (3).

Tables 9 and 10 also have three parts. The first two are self-explanatory--they are the own-price elasticities on total imports and on bilateral imports, respectively. They are derived from Equation (1) and

Equation (3), separately. The competitive price elasticities are calculated from the model using both equations. This is be explained directly below.

The variable of competitive price, i.e. the price of imports from the rest of the world, Pxr_i, can be substituted for by Pm_i, the price of total imports. This is because we have

$$M_i = Pxa_i X_i + Pxr_i Xr_i,$$

where Xr_i is the imports from the rest of the world. It follows that

$$Pxr_i = \frac{Pm_i MR_i - Pxa_i X_i}{Xr_i}$$

Thus, if X_i is relatively small (relative to total imports, M_i), we have

$$\frac{X_i}{Xr_i} \simeq 0 , \qquad \text{and}$$

$$\frac{M_i}{Xr_i} \simeq 1 .$$

Therefore,

$$Pxr_i \simeq Pm_i .$$

With this practice, the variable Pxr_i appears in both equations. this is why the effect of Pxr_i on X_i should be calculated from the whole model. Having explained the contents of the tables, we may go further to inquire into the meaning of the figures.

Comparing Table 7 with Table 8, we find that the EEC's imports have a relatively smaller T-effect but a greater B-effect, while no definite conclusion can be drawn from the figures on the income effect on bilateral trade. These findings justify our usage of the two-stage approach, since otherwise we would have only one set of information (that of the income effect on bilateral trade) and we would be unable to draw a definite conclusion.

The finding of the smaller T-effect implies that the total imports of the EEC are not influenced by domestic economic fluctuation to the same extent as the imports of Taiwan. On the other hand, the greater B-effect implies a strict trade policy against imports from Taiwan. An obvious example of this attitude against Taiwan's products is the treatment of Taiwan's mushroom exports by the EEC authorities. When the authorities decided to restrict imports of mushrooms, they almost completely eliminated Taiwan's export rights. Later, when they had no choice but but to re-open the import gate for mushrooms, they requested ROC exporters to supply almost all their needs.

Table 7

Activity Effect of MEGT

SITC	T-Effect	B-Effect			Income-Effect		
		1970	1975	1979	1970	1975	1979
01	0.340	-1.133	-3.325	-4.842	-0.385	-1.131	-1.646
2	0.178	9.753	6.181	4.626	1.736	1.100	0.823
5	0.245	3.904	2.970	2.207	0.956	0.728	0.541
6	1.145	6.701	2.705	1.810	7.673	3.097	2.072
7	0.460	3.804	2.224	2.087	1.750	1.023	0.960
8	1.852	7.128	2.968	2.039	13.201	5.497	3.776

Table 8

Activity Effect of XEGT

SITC	T-Effect	B-Effect			Income-Effect		
		1970	1975	1979	1970	1975	1979
01	2.067	--	1.487	2.270	--	3.074	4.692
24	1.620	0.787	1.371	1.786	1.275	2.221	2.893
3	1.308	--	0.640	0.801	--	0.837	1.048
5	1.794	1.112	0.795	0.729	1.995	1.426	1.308
6	1.918	3.399	1.227	0.233	6.519	2.353	0.447
7	2.457	2.228	--	--	5.474	--	--
8	2.424	4.620	3.405	0.657	11.199	8.254	1.593

Table 9

Price Effect of MEGT

SITC	Own Price Effect on Total Imports	Own Price Effect on Bilateral Imports			Competitive Price Effect on Bilateral Imports		
		1970	1975	1979	1970	1975	1979
01	-0.357	-0.872	-0.010	--	1.064	1.716	2.911
2	--	-1.737	-4.616	-0.217	7.559	7.548	3.703
5	-0.557	--	-3.947	-0.223	3.971	1.907	0.889
6	-0.238	--	-4.344	--	5.902	2.256	1.885
7	-2.178	--	-1.840	-0.757	-2.259	-2.493	-2.489
8	-0.646	-2.178	-1.204	--	0.094	0.504	0.732

Table 10

Price Effect of XEGT

SITC	Own Price Effect on Total Imports	Own Price Effect on Bilateral Imports			Competitive Price Effect on Bilateral Imports		
		1970	1975	1979	1970	1975	1979
01	-1.294	-6.647	—	-1.662	—	-1.263	-2.052
24	-0.650	-2.121	-1.961	-2.504	-1.095	-0.545	-0.509
3	-0.813	—	-0.782	-1.337	0.492	0.310	0.237
5	-1.191	-2.428	-1.973	-1.425	0.252	0.185	0.176
6	-1.018	-2.192	-3.517	-3.831	—	0.010	1.085
7	-2.442	-1.872	-0.892	-0.157	5.221	3.276	6.554
8	-0.543	—	-1.001	-5.083	-9.462	-1.344	—

In comparison with the EEC's, Taiwan's total imports are subject to more serious domestic influence, but Taiwan does not discriminate against the products of any country (and in particular, those from the EEC).

We observe in part 2 of both Tables 7 and 8 that the B-effect was declining from 1970 to 1979 in most cases. Thus, a strict import-limitation policy against any particular country has been receding in importance.

In Tables 9 and 10, we wish to focus our attention on part 3 — i.e., the competitive price effect on bilateral trade. This is because the figures in the first two parts are not unexpected: they are mostly negative, and those having relatively large magnitudes can easily be spotted.

In Table 9 we observe that most of the figures are positive (the only exceptions are those for SITC 7), whereas in Table 10 most of the figures are negative or nearly zero (again except SITC 7). Positive competitive price elasticity shows substitutability among goods from different sources, and negative elasticity shows complementarity. Substitutability in turn implies keen competition, and complementarity implies a lack of competition.

Thus Taiwan's products in the Common Market are subject to keen competition from products of other countries, while the EEC's products in Taiwan's market can prosper in an environment with little competition. This

reflects, more or less, the different attitudes of the importing authorities in the two countries.

The negative figures for Taiwan's SITC-7 products reflect that the products in this group are mostly intermediate goods needed for further processing in the Common Market. Products of this group from the EEC are end-products, like color TVs, Stereos, Automobiles, and office Machines. They are therefore subject to challenge.

V Conclusion and Policy Implication

Explanation 1 tells Taiwan has over-emphasized exports. If Taiwan had allowed more imports from the EEC, its trade share with the EEC would be much higher. It is common sense that trade is two-sided.

Explanation 2 indicates that Taiwan's trade is still seriously geographically concentrated. We are happy, however, to see that the export concentration has been diminishing over time. Taiwan has not only succeeded in expanding exports, but also in exploring more new markets. The figures on the import side, however, are not as encouraging. There was a decline in the coefficient of concentration from 1960 to 1973, but efforts to explore new sources of imported materials seem to have met with frustration since the first oil crisis.

The trade model provides more information. First, we find that Taiwan's total imports are more sensitive to domestic fluctuations than the EEC's. Second, the EEC has a stricter import policy against Taiwan's products. Third, the R.O.C.'s products are, in general, substitutable (i.e., subject to keen competition) in the Common Market, while the EEC's products are complementary goods in the Taiwan market. This reflects different attitudes held by the importing authorities in the two regions.

We suggest, therefore, that

1. Taiwan should encourgae imports as was done for exports;
2. More new markets should be explored for exports as well as for imports;
3. Taiwan should bargain for better (equal) treatment of its products on the part of the European Economic Community;
4. Taiwan should also try to separate better its trade policy from its domestic fluctuations.

Table 11

Estimation Results for MEGT, Eq. (1)

$$(1) \qquad MR_i = (Y/P_y)^{a_{1i}} (P_y/P_{mi})^{a_{2i}} (P_{di}/P_{mi})^{a_{3i}} MR_{i_{-1}}^{a_{4i}} \exp(a_{5i}.D + a_{6i})$$

i	SITC	a_{1i}	a_{2i}	a_{3i}	a_{4i}	a_{5i}	a_{6i}	R^2	DW
1	0&1	0.32 (0.11)	-.20 (0.22)	0.55 (0.18)	0.33 (0.17)	-.15 (0.04)	4.14 (1.61)	0.99	2.06
2	2	0.18 (0.37)	-1.29 (0.92)	0.99 (0.62)	0.34 (0.33)	-.33 (0.13)	5.17 (4.08)	0.98	2.81
3	5	0.24 (0.66)	0.36 (0.48)	0.20 (0.40)	0.68 (0.41)	-.12 (0.13)	1.12 (2.38)	0.99	2.33
4	6	1.14 (0.72)	0.35 (0.71)	-.02 (0.54)	0.28 (0.44)	-.23 (0.12)	-.33 (2.99)	0.98	2.03
5	7	0.46 (0.43)	2.25 (0.94)	-.08 (0.41)	0.14 (0.23)	-.18 (0.07)	4.88 (2.83)	0.99	1.86
6	8	1.85 (0.51)	1.12 (0.94)	-.48 (0.53)	-.07 (0.25)	0.32 (0.23)	-1.21 (3.51)	0.99	2.53

Note: D is a dummy variable bisecting the time between 1973 and 1974.
Figures in parenthesis are standard deviations.

Table 12

Estimation Results for MEAG, Eq. (3)

$$(3) \qquad X_i = b_{1i}\cdot(M_i/P_{xai}) + b_{2i}\cdot(M_{i2}/P_{xai}\cdot P_{xri}) + b_{3i}\cdot P_{xi} + b_{4i}\cdot P_{mi} + b_{5i}\cdot M_i + b_{6i}\cdot(Y/P_y) + b_{7i}\cdot D$$

i	SITC	b_{1i}	b_{2i}	b_{3i}	b_{4i}	b_{5i}	b_{6i}	b_{7i}	R^2	DW
1	0&1	0.89D-2 (0.59D-2)	-.14D-8 (0.66D-9)	-.11D+5 (0.60D+4)	-.60D+4 (0.69D+4)	0.15D-1 (0.83D-2)	0.26D-3 (0.78D-4)	-.46D-2 (0.15D-2)	0.72	2.35
2	2	-.66D-4 (0.44D-3)	0.48D-10 (0.47D-10)	0.63D+3 (0.44D+3)	0.23D+3 (0.57D+3)	-.22D-3 (0.80D-3)	-.23D-4 (0.13D-4)	0.32D-3 (0.18D-3)	0.79	1.32
3	5	0.63D-3 (0.61D-3)	0.91D-10 (0.85D-10)	0.14D+3 (0.18D+3)	0.30D+3 (0.24D+3)	0.81D-3 (0.20D-2)	-.16D-4 (0.13D-4)	0.16D-3 (0.50D-3)	0.99	1.39
4	6	0.73D-2 (0.42D-2)	-.15D-9 (0.10D-9)	0.15D+4 (0.57D+4)	-.19D+4 (0.32D+4)	0.15D-1 (0.41D-2)	-.39D-3 (0.14D-3)	0.25D-2 (0.11D-2)	0.99	1.51
5	7	-.16D-2 (0.45D-2)	0.25D-9 (0.68D-10)	-.89D+3 (0.49D+4)	0.19D+4 (0.32D+4)	0.15D-2 (0.39D-2)	-.34D-4 (0.64D-4)	0.16D-2 (0.95D-3)	0.99	3.02
6	8	0.20D-1 (0.81D-2)	-.35D-10 (0.64D-10)	0.32D+5 (0.30D+5)	-.13D+5 (0.12D+5)	0.44D-2 (0.45D-2)	-.98D-3 (0.53D-3)	-.68D-2 (0.20D-2)	0.99	1.55

Note: Figures in parenthesis are standard deviations.

Table 13

Estimation Results for XEGT, Eq. (1)

$$(1) \qquad MR_i = (Y/P_y)^{a_{1i}} (P_y/P_{mi})^{a_{2i}} (P_{di}/P_{mi})^{a_{3i}} CAP^{a_{4i}} \exp(a_{5i}.D + a_{6i})$$

i	SITC	a_{1i}	a_{2i}	a_{3i}	a_{4i}	a_{5i}	a_{6i}	R^2	DW
1	0&1	2.07 (0.30)	-.10 (0.91)	1.40 (1.09)	-.19 (0.06)	-.27 (0.20)	1.31 (0.50)	0.99	1.91
2	2&4	1.62 (0.15)	0.70 (0.29)	-.05 (0.16)	-.13 (0.04)	-.24 (0.09)	2.99 (0.26)	0.99	1.81
3	3	1.31 (0.42)	1.58 (1.20)	-.77 (0.99)	0.12 (0.11)	1.31 (0.59)	2.17 (0.80)	0.96	2.41
4	5	1.79 (0.22)	0.32 (0.51)	0.87 (0.55)	-.09 (0.04)	0.02 (0.13)	2.01 (0.39)	0.99	2.55
5	6	1.92 (0.19)	0.53 (0.80)	0.49 (0.91)	-.19 (0.06)	-.33 (0.11)	2.17 (0.34)	0.99	2.18
6	7	2.46 (0.29)	2.14 (0.82)	0.30 (0.55)	-.22 (0.06)	-.51 (0.17)	2.03 (0.49)	0.99	2.76
7	8	2.42 (0.43)	-.62 (1.85)	1.16 (2.11)	-.11 (0.13)	-.13 (0.25)	-.17 (0.79)	0.97	2.00

Note: CAP is the capacity variable of the exporting country.
Figures in parenthesis are standard deviations.

Table 14

Estimation Results for XEGT, Eq. (3)

$$(3) \qquad X_i = b_{1i}\cdot(M_i/P_{xai}) + b_{2i}\cdot(M_{i2}/P_{xai}\cdot P_{xri}) + b_{3i}\cdot P_{xi} + b_{4i}\cdot P_{mi} + b_{5i}\cdot M_i + b_{6i}\cdot(Y/P_y) + b_{7i}\cdot D$$

i	SITC	b_{1i}	b_{2i}	b_{3i}	b_{4i}	b_{5i}	b_{6i}	b_{7i}	R^2	DW
1	0&1	-.15D-0 (0.14D-0)	0.17D-6 (0.81D-7)	-.21D+4 (0.21D+4)	0.13D+4 (0.17D+4)	0.24D-1 (0.40D-1)	0.42D-2 (0.43D-2)	-.31D-1 (0.36D-1)	0.97	1.59
2	2&4	0.93D-2 (0.71D-2)	0.37D-8 (0.32D-8)	0.44D+2 (0.31D+3)	-.14D+3 (0.35D+3)	-.86D-2 (0.34D-2)	0.29D-2 (0.46D-3)	0.80D-3 (0.11D-2)	0.97	2.97
3	3	-.24D-3 (0.85D-2)	0.39D-10 (0.19D-8)	-.13D+2 (0.52D+2)	0.13D+2 (0.50D+2)	-.14D-2 (0.99D-3)	0.62D-4 (0.24D-3)	0.30D-2 (0.84D-2)	0.99	2.02
4	5	0.23D-0 (0.57D-1)	-.39D-7 (0.68D-7)	-.16D+4 (0.14D+4)	0.12D+4 (0.13D+4)	-.34D-1 (0.26D-1)	0.89D-4 (0.22D-2)	-.66D-1 (0.15D-1)	0.99	1.15
5	6	0.26D-0 (0.94D-1)	-.67D-7 (0.32D-7)	0.28D+4 (0.31D+4)	-.17D+4 (0.22D+4)	-.14D-0 (0.37D-1)	-.53D-2 (0.51D-2)	0.27D-1 (0.13D-1)	0.99	2.56
6	7	0.41D-0 (0.13D-0)	-.27D-6 (0.34D-7)	-.27D+3 (0.96D+4)	0.37D+5 (0.11D+5)	0.10D-0 (0.32D-1)	-.91D-1 (0.13D-1)	0.25D-1 (0.30D-1)	0.99	2.16
7	8	0.19D+1 (0.28D-0)	-.17D-50 (0.25D-60)	0.26D+5 (0.43D+4)	-.19D+5 (0.31D+4)	-.41D-0 (0.92D-1)	-.24D-1 (0.46D-2)	-.14D-0 (0.46D-1)	0.99	1.91

Note: Figures in parenthesis are standard deviations.

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