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# FOREIGN TRADE AND THE DISTRIBUTION
# OF INCOME IN THAILAND

## Kwan S. Kim and Pornpen Vorasopontaviporn

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**Kwan S. Kim** is Professor of Economics and departmental fellow of the Kellogg Institute at the University of Notre Dame. He has served as an economic consultant for governments of developing countries and for international agencies. He has written numerous books and articles on trade and development and planning and industrialization, with special interests in East Asia, East Africa, and Latin America. Recent publications include *Mexico: Development Strategies for the Future* (with Denis Goulet) and *Política industrial y desarrollo en Corea del Sur*, and he is editor of *Papers on the Political Economy of Tanzania* and *Debt and Development in Latin America*.

**Pornpen Vorasopontaviporn** is Assistant Professor of Economics at the University of Ramkhamhaeng, Thailand. She wrote her Ph.D. thesis on "Trade Policy for Employment and Income Distribution: The Case of Thailand" (University of Notre Dame, 1984).

## ABSTRACT

This paper makes an empirical investigation of the structures of employment and earnings associated with possible alternative trade strategies for Thailand. The authors focus on ascertaining who owns the factors of production that would be rewarded by the changes in trade structure under consideration. Their simulation is based on an extended input-output analysis, using Thailand's recent social accounting matrices and household budget surveys, from which they conclude that the employment and income effects of export promotion are about twice as great as those of import substitution and that an outward-looking strategy, moreover, ensures a better utilization of capital. However, export activities lead to the creation of largely low productivity employment; thus, expanding export activities alone is unlikely to raise the average living standard of the poor.

## RESUMEN

Este trabajo hace una investigación empírica de las estructuras de empleo e ingresos asociadas con posibles estrategias alternativas de comercio para Tailandia. Los autores enfocan su atención en averiguar quien es dueño de los factores de producción que se recompensarían con los cambios estructurales considerados. La simulación de los autores está basada en un análisis extensivo de insumo-producto, usando recientes encuestas de las matrices de contabilidad sociales y de presupuesto familiar en Tailandia, de las cuales se concluye que el empleo y los bienes de ingreso de la promoción de exportación son el doble de los de substitución de importación y que, más aún, una estrategia con vistas al exterior, asegura una mejor utilización del capital. Sin embargo, las actividades de exportación llevan generalmente a la creación de empleo de baja productividad, de modo que el hecho de expander las actividades de exportación por si solo, no es probable que aumente las condiciones medianas de vida de los pobres.

## 1.  Introduction

The recent arguments supporting an outward-looking economic strategy for developing countries are well known and need  not  be  repeated  here.[1]  In particular,  export  push  in  a developing country can be seen as a strategy to increase the incomes of the country's most abundant factor—labor—thereby reducing levels of unemployment and poverty.[2]  Developing country exports are normally labor-intensive, and the majority of workers are poor; thus, this shift of incomes toward labor should lead to a more even distribution of income.[3]  In contrast,  an import-substitution (IS) oriented strategy is considered less effective in creating employment and in alleviating poverty because production in IS industries is less labor-intensive than should be dictated by the country's factor endowments.

This paper attempts to simulate in quantitative terms the implications of alternative trade structures[4]  for employment and incomes, in particular, the incomes of the poor in Thailand.  In a largely open economy as in Thailand, the choice of foreign trade regime has important effects on levels of employment, incomes and the distribution of income.  The studies by Akrasanee (1981), Patamasiriwat (1981), and Tambunlertchai (1981) show that for Thailand, manufactured goods exports, especially those that are non-natural resource based, are conducive to the creation of employment.  The studies, however, deal mainly with manufacturing industry and need extended analysis as they fail to take into account the interindustry linkage effects of non-manufacturing sectors.  As for the distributional consequences of foreign trade, no empirical measures have been attempted for Thailand.

This paper thus focuses first on the structure of earnings associated with alternative trade strategies by ascertaining who owns the factors of production that would be distinctly rewarded with a shift in trade structure.  The next section surveys Thailand's trade policies and structural

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[1] For a comprehensive empirical study on the developmental role of trade, see Krueger, et al. (1981 and 1982).

[2]  For instance,  see Krueger (1978 and 1980), Mohammad (1981), and Watanabe (1972).

[3]  See Little, et al. (1970), and Bruton (1972).  For the distributional effects of protection under import substitution, see Schultz (1981).

[4]  By trade structure is meant the commodity composition of foreign trade.

changes from a historical perspective.  This is followed by the model in Section 3 and then by Section 4, which describes the sources of data.  Section 5 reports the  main  findings  of  our analysis, followed by the highlight of policy implications drawn from the study.

It is worth pointing out that the conventional, Neoclassical theory of income distribution conceives its central problem to lie in the determination of levels of employment and remuneration of the factors of production, usually grouped into labor and capital.  This theory is, in general, inadequate to explain poverty in a developing country where the majority of the poor are self-employed and do not always enter the wage economy.  As will be shown later, in the case of Thailand wage-earners must be  considered  as  belonging  to  the  middle-income  classes;  the division along the line of  functional income distribution between wages and profits appears to have little to do with the issue of distributional equity.

## 2.  The Evolution of Trade Regime and Structure

Thailand experienced an impressive economic  growth  during  the  period  1960-1980. Real GDP grew at an average annual rate of 7%  with the rate of growth in per capita income averaging 3.8%.[5]  The overriding feature during Thailand's high growth period was the rapid pace of industrialization:  the share of industry in GDP rose from 18% in 1960 to 29.4% in 1980 while that of agriculture steadily declined from 40.5% to 25.2% over the same period.

Thailand's success in industrialization has, however,  failed  to  affect  in  any  significant measure the vast majority of Thais who still live in agricultural communities.  Industry-led growth appears to have, in fact, widened the disparity in income, in particular between small farmers and urban dwellers and between Bangkok and the poorer regions such as the northeast.

Recently, the government's trade policy has increasingly  been  turning  toward  export promotion.  In this context the interrelationships among trade, employment, and  incomes for the poor are emerging as an important policy issue since Thailand, in relation to other developing

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[5] The National Economic and Social Development Board, *National Income of Thailand*, Office of Prime Minister, Bangkok, Thailand, 1981.

countries, maintains a fairly open trade system with relatively low tariffs and a few quantitative import restrictions. The share of foreign trade in GDP has been high; for instance, during the period 1974-1978, the export and import shares in GDP were 21% and 26%, respectively, as against the corresponding figures of 12% and 14% for all developing countries.

From a historical perspective, two distinct periods of trade regime can be discerned during the high growth period of 1960-1980. First, the structure of incentives up to the mid-1970s encouraged import substitution, particularly in nondurable consumer goods. Growth in manufacturing was primarily based on production geared toward the domestic market. By the mid-1970s, however, the domestic market for import-competing goods became saturated. The government began to shift its policy in favor of the export sector by reducing the policy bias against exports. World markets for developing country exports were also favorable during this period. As a result, Thailand's exports—especially in manufactured goods—expanded at a rapid pace; export earnings rose to nearly a billion dollars by 1978, accounting for about a quarter of the country's total exports.

Thailand's commodity composition of trade has roughly reflected the changing structure of the economy. In exports, agricultural products have been predominant; their share in the total exports has, however, been declining; it fell, for instance, from 51.5% in 1977 to 47.1% in 1981, while the share of industrial goods exports rose to 32.7% during the period (Table 1). Agricultural exports are highly concentrated in a few products. Currently, more than 60% of total export revenues come from the following eight products: rice, rubber, maize, tapioca products, fresh prawn, tin, sugar, and textile materials.

Merchandise imports in the 1950s consisted mainly of consumer goods, accounting for about 60% of the total imports in 1951 (Table 2). With the push for industrialization in the 1960s, capital and intermediate goods imports, including raw materials, began to rise in importance. At the same time, with the advance made in import substitution of consumer goods, their share in the total imports rapidly declined; by 1981, capital goods, consumer goods, and intermediate products accounted for 26.2%, 10.6% and 24.7% of the total imports, respectively.

## 3. The Model

The empirical framework employed for this study is an open input-output system extended from the earlier works of Pyatt (1972), Paukert et al. (1974), Miyazawa (1976), and Kim and Turrubiate (1984). Departing from the conventional input-output model, final consumption demands will be treated here as an endogenous variable to depend on the pattern of income distribution. Our model specifically takes into account different propensities to consume by different income groups. This is important since the assumption of exogenous consumption likely results in an underestimation of the true impact of interindustry linkage effects.

The earlier model of Kim and Turrubiate (1984) treated the consumption in an aggregate term by relating the economy's consumption spending to national income. The present model is more detailed and algebraically more complex, as it disaggregates the matrices of both final domestic and import demands by different income groups. Another extension is treatment of socioeconomic groups. Economic classes are defined not only by income levels but also by other attributes, such as skill levels and types of work. Our interest in using this model is to obtain a more comprehensive perspective on the working poor in Thailand.

Keeping in mind that, unless otherwise stated, the dimension of the notations denotes the number of sectors in the economy, we start with the basic accounting identity that for each sector, the total output supply that consists of gross output X and total imports M, is equal to the total demand comprising intermediate demand A X, consumption spending C, and other exogenous final demand F:

$$X + M = A X + C + F \qquad (1)$$

where A is a square matrix of input-output coefficients inclusive of imported inputs.

Consumption (C) depends on income (Y):

$$C = A c \bullet Y \qquad (2)$$

where Ac is a matrix of marginal propensities to consume classified by n number of sectors[6] and r number of income groups. Y is a column vector of r order whose elements represent the corresponding group's household income.

Income accruing to each group is related to the level and composition of sectoral outputs:

$$Y = Ay \bullet X \tag{3}$$

where Ay is a matrix of value-added coefficients whose element (r,j) shows the value-added accruing to income group r from activities of industry j.

Total imports consist of intermediate uses (Mi), imports for consumption (Mc), and imports for other final uses (Mf).

$$M = Mi + Mc + Mf \tag{4}$$

Mf that includes non-private sector consumption and investment goods imports is assumed exogenously determined; and Mi and Mc are assumed to depend on output X and income Y as:

$$Mi = Am \bullet X \tag{5}$$

$$Mc = Amc \bullet Y \tag{6}$$

where Am is a matrix of intermediate import coefficients, and Amc a matrix of consumption-import coefficients.

Combining equations(1) to (6) and solving for X, we obtain

$$X = (I - A - Ac \bullet Ay - Am - Amc \bullet Ay)^{-1} (F - Mf)$$

or for short, 
$$X = H \bullet (F - Mf) \tag{7}$$

where our modified Leontief matrix H combines both the income-consumption multiplier and interindustry linkage effects.

The quantities of labor L, classified into r income groups, required for production of goods to satisfy a given vector of final demands is then given by

$$L = A^* \bullet H \bullet (F - Mf) \tag{8}$$

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[6] The coefficients of Ac are estimated from a linear regression equation that includes the intercept, and should be interpreted as "marginal." Nevertheless, given the presumption of a low income elasticity of food consumption (Engel's law), our estimates are likely to cause an upward bias to the effects of changes in the agricultural sector in an expanding economy. The authors are indebted to a reader for this observation.

where A* is a matrix of labor requirements whose rows represent the employment coefficients in different industries corresponding to each income group.

Now, equation (3) which determines the income Y accruing to each income group can be rewritten as

$$Y = Ay \bullet H \bullet (F - Mf) \qquad (9)$$

This equation simulates the effects on the size distribution of income when there is a change in domestic final demands, F - Mf, which includes demands for such alternative trade categories as export, import-competing, and nontradable goods.

It remains to define the categories of commodities that may be identified as "exportables," "importables," or "nontradables."  The procedure adopted here is to observe the composition of expenditures on any trade category across sectoral outputs.  For instance, a million bahts' worth of the basket of exportables is obtained as a weighted average of the spending on exports, weighted by the observed commodity composition of that trade category.   The basket of importables is similarly calculated as weighted averages of imported commodities that are produced in part domestically.  Nontradable goods then include other residual activities.

For purposes of analysis, we may simplify the expression of  final demands as

$$F - Mf = TQ \qquad (10)$$

where T is a "n x t" matrix whose element shows the share of sector i in trade category t [7]  and Q is a vector of  instrumental  variables, which in our case consists of  the levels, respectively, of exportables, import-substitutable, and nontradable goods.   The impact of alternative trade structures can, for instance, be compared by assuming a "one million bahts" increase in the Q vector for three trade categories identified here as export promotion (EP), import substitution (IS), and nontradables (NT).

## 4.  The Data

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[7] The row sum for each trade category in the "T" matrix is equal to one.

The data used in this study mainly come from the 1975 Social Accounting Matrix (SAM) for Thailand.[8] The SAM provides a snapshot of the principal flows in an economy at a point of time. Structured around an input-output table, it presents data on economic activities by different agents in the economy.[9]

The SAM for Thailand was constructed as an accounting framework for a multi-sector, sequential equilibrium model (named "SIAM 2 for Thailand"). The SIAM 2 comprises 567 accounts presented in 39 matrices. At present, the SAM represents the most complete economic data system, and as such is widely used for policy formulation and planning in Thailand. For purposes of our study, however, each vector and matrix used here has been reconstructed using the following additional sources of data: (1) *National Accounts of Thailand*, 1979; (2) *The Basic Input-Output of Thailand*, 1975; (3) *The Labor Force Survey*, 1975-1980; and (4) fiscal data from the Ministry of Finance.

In this study, the production account has been aggregated to comprise the following 6 sectors: Agriculture, Mining and Quarrying, Industry, Energy, Construction, and Services.[10] These sectors are further subdivided into 17 activities. There were some problems in directly applying the original data to our model. For instance, the household incomes in the SAM included factor payments, transfers from the government and other households, and payments from companies as well as from abroad. The matrix that represents household incomes in this study includes only "factor payments" and "company transfers to households." This simplification is necessary because the figures for "other sources of income" in the SAM, which in any event account for a trivial 0.63% of the total household income, have not been disaggregated by the

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classification scheme employed in our analysis.  This omission is not likely to affect the results of

our study.


## 5.  Empirical Findings

This section reports estimates of the  impacts  of  alternative  trade  structures  on  labor

absorption, factor intensity, and incomes received by different socioeconomic groups in Thailand.

<u>Employment Effects</u>

Estimates of labor measured in man-years that are directly and indirectly required per one

million-baht increase of output[11] in each trade category are shown in Table 3.  It is significant to

observe that the level of employment created in both the export sector (129.3 man-years) and the

nontradable sector (111.2 man-years) is about twice that generated in the  import-substituting

sector (70.3 man-years).  The large employment effect in export production can be explained by

substantial indirect labor requirements in resource-based industries, which dominate Thailand's

export sector.[12]

To better understand the link between employment and income distribution, it will be

useful to examine the employment effects at disaggregated levels of the work force.  First, Table 3

shows the employment effects by types of work.  In Thailand, about three quarters of the work

force can be considered as "own-account (OA)" workers, with those remaining split into groups of

"casual," "blue-collar,"  or "white-collar"  workers.    Occupationally,   the  "OA"  workers  are

represented by self-employed fishermen and hunters; farmers operating on a small-scale farm

under an extended family system; and other small-scale, urban self-employed workers.  As shown

in the table, in Thailand the average income of the "OA" workers, together with that of the "casual"

ones, is about a quarter of that of the highest income group—the "white collar" workers.  There is

evidence to suggest that self-employed workers often choose to avoid large-scale projects, even

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[11]  Alternative estimates of labor required per unit of value added yielded results  essentially
similar to those reported in Tables 3 and 4.

[12]  The earlier studies on Thailand, *op. cit.*, failed to capture the intersectoral linkage effects
originating in agriculture, since these studies were confined to  the  effects  on  manufacturing
industries alone.

though the latter may be more profitable than small-scale ventures.[13]  In Thailand, business is normally conducted at the family-unit level involving only a few family-related associates.  There is a tendency to shun large-scale projects that may need to involve participation of outsiders.

It can be readily seen from the table that the export sector employs the largest share of the "OA" workers compared with other trade categories:  about 85% of new jobs created under EP go to the "OA" group, compared with 77% under IS.  In a similar vein, Table 4 shows that EP is also superior in creating jobs for Thailand's  most  abundant  factor,  the  unskilled  workers.   In contrast, the requirement of skill contents is most severe under IS.  Tables 3 and 4 thus present mutually consistent findings, since in Thailand the "OA" workers, along with the "casual" ones, can for practical purposes be considered as the "unskilled."  These workers are predominantly represented in the informal sector where skill requirements would be far less stringent than in the formal, urban economy.  These results, then, confirm the predictions of Heckscher-Ohlin's theory that a country exports products that are relatively intensive in their use of the country's abundant factor.  The most abundant factor in Thailand is obviously represented by those unskilled, self-employed workers officially classified as "own-account" laborers.

Table 5 further compares the effects on employment by sector.  One of the noteworthy results from our disaggregation is that agriculture generates the largest number of jobs under all trade categories.   Under an expansion of both  EP and NT  activities,  new jobs  created  in agriculture are about 60% of the total.  Even under IS,  a third  of  employment  creation  is  in agriculture.  This reflects the structural characteristic of the Thai economy that the agricultural sector is relatively labor intensive, and that it is generally  well-integrated  with  the  rest  of  the economy.  In particular, the substantial employment creation in agriculture even under IS can be explained by the fact that manufactured goods exports in Thailand depend on resource-based production, essentially relying on  the  domestic  provision  of  agricultural  inputs.   Indeed,  the

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[13]  For instance, manufacturing establishments employing less than 10 workers account for over three quarters of all firms and nearly one fifth of employment in manufacturing in Thailand.  See the World Bank, "Thailand: Industrial Development Strategy in Thailand," background paper no. 2059-TH, Washington D.C., 1980.

backward linkage effects for resource-based as well as for nontradable industries in Thailand have been found to be substantial in a previous study.[14]

Next to agriculture, the "mining and quarrying" sector producing tin, tungsten, fluorite, antimony, and manganese is the most important source of new jobs under IS, and also the second largest source under EP. This sector is considered fairly labor intensive in Thailand, at the same time providing relatively well-paid jobs. As for the industrial sector, EP and NT activities again are shown superior in creating employment compared to IS activities, although in terms of the percentage employed, IS shows larger linkage effects. This confirms the earlier view held by several Thai authors that the outward-looking strategy, even in the context of the industrial sector alone, is more employment-creating than the inward-looking alternative.

Finally, there is another useful comparison in regard to the capital intensity associated with alternative trade structures (Table 6). Here, the capital intensity is measured as the value of capital assets divided by the number of man-years for each sector. The result—that import industries are the most capital-intensive, followed by nontradable and export industries in that order—is consistent with the earlier result on the ranking of employment effects. Moreover, IS industries appear to employ less unskilled and more skilled labor in comparison with export and nontradable industries, respectively. These results are also consistent with Heckscher-Ohlin's theory.

**The Distributional Consequences**

The results on incomes received by different sectors are reported in Table 7. One noteworthy result is that the expansion of either exportable or nontradable activities generates, on average, earnings about twice those earned under IS. In particular, income earnings to agriculture under EP are about thrice those accruing to industry. This contrasts with the case of the industrial sector in which IS activities generate factor income more than 1.5 times than do EP activities. This difference by sectors has significant distributional implications: since agricultural

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[14]  See Tambunlertchai, et al., (1981).

workers in Thailand are much poorer than urban-based industrial workers,[15] the urban-rural income gap will likely be reduced with the shift in policy toward EP and away from IS orientation.

Marked differences in distributional effects are also evident when comparisons are drawn between types of work. Table 8 shows that incomes accruing to the "OA" workers under the expansion of either EP or NT activities are more than twice those generated under IS, while under IS a far larger share of income goes to the relatively better paid "blue-collar" group. It is well to note that the "OA" workers are the lowest-paid income group, accounting for a predominant share (64%) of the agricultural as well as the NT sector labor force. Thus, the expansion of either the NT sector or the agricultural sector—or for that matter, the export sector since agricultural products are the country's major export item—should improve the economic position of the lower groups better than the expansion of IS activities.

It is interesting to note that in the case of Thailand employment creation is not all closely correlated with factor income; the relationship differs from sector to sector. For instance, although IS activities create a large number of jobs for the lowly paid "OA" worker group (77%), its earned incomes account for only 29% of the total. On the other hand, the higher-wage, "blue-collar" workers receive close to 40% of increased earnings, while accounting for a mere 13% of newly created jobs under IS. The service sector similarly receives the second largest share of income spillover from EP, but the impact on employment is rather low: the number of jobs created under EP accounts for a mere 2.8%, while the service workers receive up to 20.3% of increased incomes. This is because most of the new jobs created under EP go to "blue-collar" workers. The opposite is true for the mining and quarrying sector: here, IS activities are far superior in creating new jobs compared to other trade categories. Nevertheless, increases in the share of incomes generated are rather small; our calculations reveal that EP, IS, and NT activities account for 24.8%, 40.8% and 11.2% of new jobs, respectively, but the corresponding figures for income share are

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[15] The SAM data show that workers in agriculture, who represent 65% of the total population in Thailand, earn only 36.8% of the total income.

only 1.0%, 1.6% and 0.4%.  Thus, the distributional impact appears sensitive not only to the selection of trade strategy but also to types of industrial activities.

## 6.  Summary and Conclusions

Comparisons of alternative trade strategies show that  the IS strategy scores badly on all accounts of the impact on employment, income, and capital intensity:  such a strategy is least employment-creating, least income-generating, and most capital-intensive.  The EP strategy, on the other hand, yields the best results in generating new jobs and in saving the use of capital, although the strategy oriented toward nontradable industries yields a slightly more favorable result in generating value-added.  It is significant to observe that the employment and income effects of EP are almost twice those of IS.  Thus, our simulation results suggest that a structural change in Thailand from IS to EP orientation would about double the increase in employment and incomes.[16]  Furthermore, an outward-looking orientation assures a better utilization of capital.[17]

There are, however, a few points that must be noted in considering an export-oriented strategy for Thailand.  First, as already mentioned, export activities in Thailand create in  large quantities  essentially  low-productivity  employment;  they  do  not  appear  to  contribute  to  the expansion of employment in high-productivity sectors.  Thus, the average living standard of the poor in  Thailand is  not  likely  to  be  immediately raised  by  expanded  export  activities  alone. Moreover, possibilities of export expansion depend on the world market conditions.  Thus, the analysis needs to take into account future prospects for developing country exports in the world market.  Finally, one must keep in mind that our findings are based on an input-output model simulation, which is static and, therefore, is appropriate as more of a short-run analysis.  From a longer-run perspective, the values of input-output coefficients are likely to change with structural changes of the economy; and likewise, primary as well as secondary goods exports as a share of

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[16]  These results contrast somewhat with those in Kim and Turrubiate's study (1984) on Mexico. In the case of Mexico, expansion of exportables slightly improves the distribution of income, but only when direct, intersectoral linkage effects are taken into account.  The income distribution remains virtually unaffected by alternative trade structures when the total interindustry effects are considered.

[17]  In the sense that the capital-output ratio remains much lower in the export sector than in the import-substituting sector.

the total will change with per capita income.  There are also other aspects to the selection of a trade strategy that involve much broader issues concerning the country's industrialization and structural changes.  Obviously, proper caution is necessary in interpreting the results of this study for a long-run analysis.

# TABLE 1

## The Commodity Composition of Exports

(unit: billions of bahts)

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|  | **1977** | | **1981** | |
| --- | --- | --- | --- | --- |
|  | **amount** | **percent** | **amount** | **percent** |
| Agricultural products | 36.68 | 51.47 | 72.12 | 47.12 |
| Rice | 13.43 | 18.85 | 26.50 | 17.32 |
| Tapioca | 6.12 | 8.59 | 16.54 | 10.81 |
| Maize | 3.35 | 4.70 | 8.24 | 5.38 |
| Rubber | 7.71 | 10.82 | 10.67 | 6.97 |
| Shrimp | 1.17 | 1.64 | 2.11 | 1.38 |
| Others | 4.90 | 6.87 | 8.06 | 5.26 |
| Industrial products | 21.77 | 30.55 | 50.04 | 32.70 |
| Food processing | 4.54 | 6.37 | 9.57 | 6.25 |
| Metal products | 7.44 | 10.44 | 9.10 | 5.95 Textiles |
| 4.41 | 6.19 | 12.18 | 7.96 |  |
| Others | 5.38 | 7.55 | 19.19 | 12.54 |
| Miscellaneous items | 12.81 | 17.98 | 30.85 | 20.16 |
| Total | 71.26 | 100.00 | 153.01 | 100.00 |

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Source:  Bank of Thailand, *Annual Economic Report*, various issues.

## TABLE 2

### The Commodity Composition of Imports

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| | amount in billions of bahts | | | percentage composition | | |
|---|---|---|---|---|---|---|
| | 1951[a] | 1970[b] | 1981[b] | 1951 | 1970 | 1981 |
| Consumer goods | 2.15 | 5.23 | 22.90 | 59.07 | 19.36 | 10.58 |
| Capital goods | 0.92 | 9.37 | 56.66 | 25.27 | 34.69 | 26.17 |
| Intermediate goods & raw materials | 0.57 | 6.73 | 53.48 | 15.66 | 24.92 | 24.70 |
| Fuels and lubricants | - | 2.33 | 65.10 | - | 8.63 | 30.07 |
| Other imports | - | 3.35 | 18.36 | - | 12.40 | 8.48 |
| Total | 3.64 | 27.01 | 216.50 | 100.00 | 100.00 | 100.00 |

Sources:   a.   United Nations: _Statistical Yearbook_ (Bangkok: Economic Commission for Asia and the Far East, 1961).

            b.   Bank of Thailand: _Statistical Bulletin_ (1979) and _Annual Economic Report_ (1981).

**TABLE 3**

**Employment Effects by Types of Work of Unit-Expansion
in Alternative Trade Categories**

(Unit: man-years)

| | Number of workers in percentage | Per worker earnings (1000 bahts) | Employment Effects | | |
| | | | EP | IS | NT |
|---|---|---|---|---|---|
| Own account | 75.09 | 7.553 | 109.305 (84.55)* | 53.900 (76.65) | 90.470 (81.33) |
| White collar | 3.35 | 35.068 | 0.170 (0.13) | 0.141 (0.20) | 0.250 (0.21) |
| Blue collar | 13.30 | 19.008 | 9.224 (7.13) | 9.217 (13.11) | 11.850 (10.65) |
| Casual | 8.26 | 8.632 | 10.581 (8.19) | 7.062 (10.04) | 8.670 (7.79) |
| Total | 100.00 | | 129.280 (100.00) | 70.32 (100.00) | 111.240 (100.00) |

*Note:  Figures in parentheses are percentages.

**TABLE 4**

**Trade Structural Effects on Skilled and Unskilled Employment
(per increase of one million baht worth of output)**

| | EP | | IS | | NT | |
| | man-years | percent | man-years | percent | man-years | percent |
|---|---|---|---|---|---|---|
| Skilled | 9.39 | 7.26 | 9.36 | 13.31 | 12.10 | 10.88 |
| Unskilled | 119.89 | 92.74 | 60.96 | 86.69 | 99.14 | 89.12 |
| Total | 129.28 | 100.00 | 70.32 | 100.00 | 111.24 | 100.00 |

## TABLE 5

### Trade Effects on Employment Creation by Sector
### (per one million baht worth of output)

( unit: man-years)

|  | EP | | IS | | NT | |
|  | amount | percent | amount | percent | amount | percent |
|---|---|---|---|---|---|---|
| Agriculture | 75.55 | 58.44 | 24.57 | 34.94 | 68.51 | 61.59 |
| Mining and quarrying | 2.07 | 24.81 | 28.70 | 40.81 | 2.50 | 11.24 |
| Industry | 8.11 | 6.28 | 5.66 | 8.05 | 10.02 | 9.01 |
| Energy | 9.96 | 7.70 | 8.70 | 12.37 | 13.26 | 11.92 |
| Services | 3.59 | 2.77 | 2.67 | 3.83 | 6.94 | 6.24 |
| Total | 129.28 | 100.00 | 70.30 | 100.00 | 111.23 | 100.00 |

## TABLE 6

### Estimates of the Capital Intensity by Trade Categories.

(unit: millions of bahts per man-year)

|  | EP | IS | NT |
|---|---|---|---|
| Total | 0.0043 | 0.0145 | 0.0056 |
| Unskilled | 0.0046 | 0.0167 | 0.0060 |
| Skilled | 0.0596 | 0.1090 | 0.0496 |

Note:  Unskilled labor comprises "own account" and "casual" workers; and skilled labor comprises "white collar" and "blue collar" workers.

## TABLE 7

### Effects of Alternative Trade Structures On Value Added by Sector

(unit:  millions of bahts)

| Sector | EP amount | EP percent | IS amount | IS percent | NT amount | NT percent |
|--------|-----------|------------|-----------|------------|-----------|------------|
| Agriculture | 0.753 | 63.81 | 0.253 | 33.37 | 0.696 | 52.33 |
| Mining and quarrying | 0.012 | 1.02 | 0.011 | 1.61 | 0.005 | 0.38 |
| Industry | 0.147 | 12.45 | 0.228 | 37.05 | 0.173 | 13.01 |
| Energy | 0.028 | 2.38 | 0.026 | 3.81 | 0.039 | 2.93 |
| Services | 0.240 | 20.34 | 0.165 | 24.16 | 0.417 | 31.35 |
| Total | 1.180 | 100.00 | 0.683 | 100.00 | 1.330 | 100.00 |

## TABLE 8

### Comparisons of Income Earnings by Types of Work
### under Alternative Trade Structures

(unit:  millions of bahts)

| | EP amount | EP percent | IS amount | IS percent | NI amount | NI percent |
|--------|-----------|------------|-----------|------------|-----------|------------|
| Own account | 0.80 | 67.04 | 0.30 | 45.39 | 0.77 | 57.89 |
| Blue collar | 0.22 | 8.81 | 0.28 | 40.12 | 0.31 | 23.31 |
| White collar | 0.06 | 5.42 | 0.05 | 7.76 | 0.14 | 10.53 |
| Casual | 0.10 | 8.73 | 0.05 | 6.73 | 0.11 | 8.27 |
| Total | 1.18 | 100.00 | 0.68 | 100.00 | 1.33 | 100.00 |

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