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THE FACTOR PROPORTIONS THEORY OF INTERNATIONAL TRADE: EMPIRICAL RESULTS FROM THE UNITED STATES AND THE PHILIPPINES

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This paper tests empirically whether the factor proportions or Heckscher-Ohlin theory is applicable to two countries with highly contrasting factor endowments — the United States and the Philippines. A multi-factor model is presented which includes measures of skilled labor, technology and natural resources along with capital and labor, and incorporates a measure of net export performance that overcomes weaknesses in previously used measures. It was hoped that empirical tests of this more elaborate trade model might reconcile the paradoxal tests results of the more simplistic two-factor models. The findings however, provide few definitive guidelines in the development of a more refined empirical test.

1. Introduction

The link between production, trade, and economic development has been emphasized by economists since Adam Smith. Yet the Classical and Neoclassical theories of international trade are remarkably imprecise in their explanation of why a given country has a comparative advantage in the production of certain goods. The factor proportions or Heckscher-Ohlin theory was the first international trade theory to deal substantively with this issue. Its prediction, known as the Heckscher-Ohlin Theorem, is that a country will export goods which intensively utilize that country's relatively abundant factors of production. This prediction has such enormous intuitive appeal that it is the main tenet of many international trade economists, and underlies the current operational definition of comparative advantage.

Despite the intuitive plausibility of its prediction, the factor proportions theory suffered an unexpected setback when Leontief (1953) demonstrated empirically that the capital-rich United States

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was paradoxically exporting *labor* intensive goods. Because these results were so contrary to intuitive economic rationale, a great deal of criticism was directed at Leontief's test.[1] Through further research, Leontief (1956) and others have largely refuted the statistical and methodological criticisms of his original test. Moreover, subsequent studies of trade in the United States, Indonesia, Canada, India, and Japan have identified trade patterns that are inconsistent with the factor proportions theory (Moroney and Walker, 1966; Montgomery, 1974; Wahl, 1961; Bhardwaj, 1962; Tatemoto and Ichimura, 1959; and Naya, 1967) demonstrating that Leontief's results do not represent a unique case.

The purpose of this paper is to test empirically the applicability of the factor proportions theory to two different countries with highly contrasting factor endowments — the United States and the Philippines. Each test utilizes a multi-factor model which includes measures of skilled labor, technology, and natural resources along with the two classical factors of production — capital and labor — in order to provide a comprehensive model of international trade. In addition, this model incorporates a measure of net export performance that overcomes weaknesses in previously used measures. Finally, an attempt is made to incorporate the effects of national taste or preference differentials on the predictions of the factor proportions theory.

Explanation of Previous Empirical Results

Inasmuch as the criticisms of the accuracy or the generality of Leontief's original results have been refuted, economists have had to look elsewhere for an explanation. One possibility is that the stringent assumptions of the factor proportions theory are unrealistic. For example, Travis (1964) has argued that tariffs or other trade restrictions which selectively protect domestically scarce factors of production could cause the distorted trade relationships found by Leontief. The possibility of this distortion in the United States is supported by evidence that 1958 tariffs selectively protected labor intensive goods (Lassiter, 1976, p. 28). However, while tariffs can cause U.S. imports to be labor extensive, this alone does not explain why exports are labor intensive. An export subsidy is the only trade distorting policy that could cause the United States to export labor intensive goods (Baldwin, 1971, p. 130). Similarly, transportation costs can distort the predicted trade relationship but cannot account for the reversal that has occurred in empirical tests. Heavy or bulky

[1] For a review of Leontief's test and subsequent criticisms, see Bhagwati (1964) and Baldwin (1971).

goods are expensive to export; however, they are equally expensive to import.

Another essential assumption of the factor proportions theory, non-reversible factor intensities, was challenged by Minhas (1962). He presented empirical evidence of a significant incidence of such reversals which could explain Leontief's results. An analysis of the same data by Leontief (1964) supports the view that this problem is not important empirically.

Another possible explanation for Leontief's paradoxical results is that the model used to test the factor proportions theory is over-simplified in that it considers only the two classical factors of production — capital and labor. The omission of a relevant "third factor" of production could account for the unexpected test results. For example, ignoring natural resources as a factor of production has been postulated as the cause of the paradoxical trading patterns of the United States (Vanek, 1963), the southeastern region of the United States (Moroney and Walker, 1966), and Japan (Naya, 1967). In addition, both skilled labor[2] (Keesing, 1966) and technology (Vernon, 1966) have been suggested as important factors for determining the trading patterns of manufacturing industries in the United States.

While several authors have identified various additional factors of production, most of their analyses are limited to showing that the amount of a given "third factor" utilized by a specific industry is correlated with the industry's export performance. Moreover, these analyses often consider only manufactured goods and ignore the raw material and natural resource sectors. Most importantly, all the pioneer "third factor" studies fail to combine several of these additional factors with capital and labor and thereby fail to incorporate them into a single comprehensive trade model.

A major difficulty in considering more than two factors of production is the definition of relative factor intensity. In a two-factor model, sectors can be uniquely ranked by their capital/labor ratios. In a multi-factor model, this possibility no longer exists. However, goods can be ranked by the amount of each factor required per

[2] Alternatively, the importance of different skills for determining production patterns can also be measured by a "human capital" approach suggested by Becker (1965), Kravis (1956), and Kenen (1965) which calculates the amount of capital required to train skilled labor. As noted by Waehrer (1968), this gives results similar to measuring skilled labor inputs directly. Operationally, "human capital" is more difficult to measure and is subject to greater inaccuracy.

dollar of output. Consequently, there would be a separate ranking for each factor of production. The factor proportions theory implies that if the country is richly endowed with a given factor, goods with relatively high inputs of that factor, *ceteris paribus*, will be exported.

Baldwin's Multi-Factor Trade Model

Baldwin's study (1971) is the first attempt to incorporate several factors of production into a single, comprehensive trade model. Using the 81-sector input-output table of the United States in 1958, he analyzed the export performance of 60 sectors which participated in international trade in 1962 by regressing the "adjusted net exports" of each sector on variables measuring factor inputs and market imperfections.

The results of this model are generally not consistent with the predictions of the factor proportion theory. The additional factors of production do not change the paradoxical negative coefficient of the capital:labor ratio and the signs of several other coefficients are implausible. In addition, the model fits the data poorly since the adjusted R^2 is only 0.21.

Although Baldwin's model provides a test of the factor proportions theory that is more comprehensive than previous tests, it has some weaknesses worth noting. One problem arises from the use of "adjusted net exports" as the model's dependent variable, defined as

$$EX_i/\Sigma EX_i - IM_i/\Sigma IM_i$$

where EX_i and IM_i are the values of the exports and imports of the ith sector, respectively. Though this is a widely used measure of export performance, it implicitly assumes that *merchandise* trade is balanced. If total exports of goods do not equal total imports, then equal values of exports and imports will be given different weights by this measure. Since the merchandise exports of the United States were 28 percent greater than were the merchandise imports in 1962 (Devlin, 1971, pp. 30-31), one dollar of exports is valued at only $0.78 of imports by this measure.

More importantly, this measure of net export performance is dependent on the sectoral classification system, since large sectors are given greater weight. A large sector could have a relatively high level of "net adjusted exports," even though exports would not be an important part of the sector's output. Subsequently, the ranking of sectors by this measure could change if a different sectoral classifica-

tion system were used. Though useful for comparing each sector's contribution to foreign exchange earnings, this is not the proper way to measure the degree to which each sector specializes in export or competing import goods. It is the propensity to export that the factor proportions theory predicts.

Another limitation of Baldwin's model is that natural resources are not incorporated explicitly. Baldwin did reestimate the model with the omission of sectors dominated by natural resources. This reduced but did not reverse the paradoxical results of the full model. Baldwin did not formulate a model which included a direct measure of natural resources.

The Multi-Factor Model of This Study

In an attempt to build upon the accumulated knowledge of previous investigators, a more refined empirical test of the factors of production which determine the composition of a nation's international trade has been developed. This test is based on the following multi-factor model of international trade:

$$(EX_i - IM_i)/X_i = \beta_0 + \beta_1 K_i + \beta_2 RW_i + \beta_3 PW_i + \beta_4 OW_i + \beta_5 MINE_i + \beta_6 AG_i + \Sigma_i$$

where :

EX_i : F.O.B. value of exports from the ith sector

IM_i : C.I.F. value of competitive imports into the ith sector

X_i : value of gross output of the ith sector

K_i : depreciation of capital stock required directly and indirectly per \$1,000 of X_i

RW_i : the number of scientists and engineers required directly and indirectly per \$1 million of X_i

PW_i : the number of professional workers, other than those included in RW_i required directly and indirectly per \$1,000 of X_i

OW_i : all other workers required directly and indirectly per \$1,000 of X_i

$MINE_i$: value of direct and indirect inputs from mining sectors per \$1 of X_i

AG_i : value of direct and indirect inputs from agriculture, forestry, and fishing sectors per \$1 of X_i.

There are several differences between this model and Baldwin's. First, the dependent variable now measures each sector's export per-

formance in such a way that it is not affected by either imbalanced trade or the sectoral classification system. Second, capital and labor requirements are identified separately instead of using a capital:labor ratio as an independent variable. This is more consistent with the way factor intensity is defined in a multi-factor model. In addition, it permits consideration of different types of capital and labor. A third and more important innovation is the treatment of natural resources in a multi-factor context. Hence, $MINE_i$ and AG_i serve as proxy variables for the nonrenewable and renewable natural resource content of the ith sector's output.

Three different categories of labor are considered — research workers, professional workers, and other workers. Unfortunately, lack of available data makes it difficult to differentiate more relevant labor skills.[3] As in Baldwin's model, research workers represent a proxy for technology. Although direct expenditures on research and development might be a better measure, such data are either unavailable or unreliable.[4]

The United States and the Philippines — A Presumed Contrast in Trade

Data for the United States and the Philippines were used to make two separate tests of the multi-factor model of trade. The United States was chosen to provide a comparison with Baldwin's test and other previous studies. The Philippines was selected because developing countries are seldom used to test the factor proportions theory. More importantly, the contrasting factor endowments of these two countries permit a test of the applicability of the model to widely different situations.

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[3] Current occupational classifications such as the International Standard Classification System, are not very useful for an analysis of the relative importance of skilled labor to different economic sectors. Some occupational classes, such as professional workers, tend to group workers by skills, while others, such as agricultural workers, group them by the sector in which they work. Further, the two classes used here, research workers and professional workers, define skills on the basis of formal education. For a "human capital" or skilled labor analysis, no legitimate distinction can be made between skills achieved through higher education or through on-the-job training. Unfortunately, a lack of useful data requires that this artificial distinction be made.

[4] The accuracy of using the employment level of research workers as a proxy measure of research and development expenditure for manufacturing industries in the United States has been demonstrated by Gruber, Mehta, and Vernon (1967).

It is difficult to define relative factor endowments in a multi-factor model in the same way that it is difficult to define factor intensity. In the multi-factor case, relative factor endowments can no longer be defined in terms of a simple ratio of domestic factor stocks. Rather, the relative abundance (or scarcity) of each factor is defined as the country's endowment (domestic stock) relative to the endowments of all countries. Thus by this convention, the United States is richly endowed with capital, skilled labor, technology, and natural resources, and has a scarcity of unskilled labor. The relative factor endowments of the Philippines are essentially the opposite to those of the U.S. If the Heckscher-Ohlin Theorem is to be verified empirically, the expected signs of the regression coefficients would be as follows: In the United States, the coefficients for capital, professional workers,research workers, and both renewable and non-renewable natural resources should be positive while the coefficient for other workers should be negative. The signs of the coefficients for the Philippine model should be opposite to those for the United States.

Interpreting Data

Before proceeding to the empirical results of the model, it is valuable to consider a summarization of the basic data used in the analysis. Table 1 displays the amounts of various factors of production required to generate a million dollars' worth of traded goods. The factors of production include both the direct and indirect resource requirements for a typical bundle of exports or imports. In the case of imports, the table shows a measure of resources displaced by competing purchases from abroad.[5] Comparisons between the countries must be made with caution since definitions of the variables differ between the countries.

In both nations, capital services, unskilled labor, and the two categories of natural resources have paradoxical relationships. For example, in the United States, nearly $98,000 of capital services are required to produce one million dollars' worth of exports while over $139,000 of capital services are displaced by a million dollars' worth of imports. In both countries, research workers and professional workers exhibit the expected relationships.

[5] In the United States, computations were made based on the dollar value of competitive imports. In the Philippines, it was necessary to use total imports since it was not possible to disaggregate competitive and non-competitive products.

Table 1 — Capital, Labor, and Natural Resources Embodied in the Exports and Imports of the United States and the Philippines

Factor of Production	United States, 1958			Philippines, 1965*		
	Direct and Indirect Requirements per $1 Million of:		Ratio	Direct and Indirect Requirements per $1 Million of:		Ratio
	Exports	Competitive Imports	Exports/ Imports	Exports	All Imports**	Exports/ Imports
Capital services[a] ($)	97,588	139,251	0.70	68,600	59,500	1.15
Research workers[b] (man-years)	1.2	0.7	1.71	11.1	38.6	0.29
Professional workers[c] (man-years)	8.6	7.6	1.13	5.6	15.9	0.35
Other workers (man-years)	126.5	119.4	1.06	1,692.6	6,732.0	0.25
Non-renewable natural resources[d] ($)	117,602	292,815	0.40	183,843	97,081	1.89
Renewable natural resources[e] ($)	265,107	315,961	0.84	512,371	118,471	4.32

*For compatibility, 1965 peso values were adjusted to 1958 dollars.
**For the Philippines, statistics did not allow separation of competitive and non-competitive imports.

Table 1 (Continued)

NOTE: For the U.S., these factor requirements were calculated as a weighted average of the factor requirements of 61 trading sectors of the economy. Data on exports, imports, non-competitive imports, personal consumption, and gross domestic product were taken directly from the 82 sector input-output tables in Office of Business Economics (1965). These input-output data were aggregated to 81 sectors by making imports an exogenous sector. This was used in all subsequent calculations such as calculating total (direct plus indirect) factor requirements.

For the Philippines, these factor requirements and all other data were taken or calculated from the 51 sector 1965 input-output tables published in Office of Statistical Coordination and Standards (1971). Corrections of the tables were calculated by Staatz (1974, p. 97).

[a] Depreciation of capital (Waldenhaug, 1973 and unpublished Philippine census data, 1971).

[b] For the U.S., this variable covers scientists and engineers employed in research and development only (Bureau of Labor Statistics, 1968); for the Philippines, it covers all scientists and engineers (unpublished census data, 1971).

[c] Professional workers, excluding those already included as research workers (Alterman, 1965 and Office of Statistical Coordination and Standards, 1971).

[d] Value of inputs from mining sectors (Office of Business Economics, 1965 and Office of Statistical Coordination and Standards, 1971).

[e] Value of inputs from agriculture, forestry, and fishing sectors (Office of Business Economics, 1965 and Office of Statistical Coordination and Standards, 1971).

Dividing the amount of resources employed in producing exports by the quantity of that resource displaced by imports provides a useful ratio as is seen in Table 1. These ratios further highlight unexpected results as in the case of the Philippines where capital services has a ratio greater than one. In this presumably capital-poor nation, we would expect exports to contain a smaller component of capital than imports.

Empirical Results of the Model

Regression analysis was used to test the refined multi-factor model for each country. Table 2 presents coefficients which indicate the relationship between net exports and the independent variables of the model. Equation (1) shows the results for the United States while equation (3) indicates coefficients for the Philippines.[6] A variant of the original model formulation which incorporates taste or preference is shown as equations (2) and (4). The results of this respecified model will be discussed later.

For the United States (equation (1)), only two of the six slope coefficients — capital services and research workers — have signs consistent with the factor proportions theory. For the Philippines (equation (3)), only one coefficient — research workers — has the expected sign. Thus, in both tests, a majority of the coefficients have paradoxical signs. The incorporation of several "third factors" of production fails to reverse the paradoxical findings of previous two-factor tests. In addition, the fit of both the estimated equations is poor. These results clearly do not support the factor proportions theory.

Further, the results suggest additional paradoxical relationships for both the United States and the Philippines. The United States exported goods that required significant amounts of unskilled labor and imported goods that required a large component of professional workers as well as renewable and nonrenewable natural resources. Even more paradoxically, the Philippines exported goods requiring a high component of capital, professional workers, and both renewable and nonrenewable resources. Further, the Philippines imported goods whose domestic production would have employed large amounts of unskilled labor.

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[6] For a more detailed discussion of these results and the results of other specifications of the multi-factor model, including equations utilizing only direct factor requirements, see Lassiter (1976, pp. 72-81).

Table 2 — Regression Results of the Multi-Factor Model

Variables	United States, 1958 (61 trading sectors)		Philippines, 1965 (38 trading sectors)	
Equation Number	(1)	(2)	(3)	(4)
Dependent Variable				
Net exports per $ (peso) of gross output				
Independent Variables				
Capital services	0.158	0.185	3.387*	3.080*
	(1.145)	(1.326)	(0.721)	(0.679)
Research workers	0.021	0.020	−134.780	−157.021
	(1.485)	(1.366)	(−3.607)	(−4.120)
Professional workers	−7.063*	−7.372*	87.984*	134.216*
	(−1.783)	(−1.861)	(1.517)	(2.180)
Other workers	0.220*	0.332*	−0.102	−0.109*
	(0.538)	(0.792)	(−1.700)	(−1.879)
Nonrenewable natural resources	−0.137*	−0.146*	0.063*	−0.561
	(−4.131)	(−4.290)	(0.069)	(−0.593)
Renewable natural resources	−0.088*	−0.097*	0.576*	0.225*
	(−2.056)	(−2.226)	(1.049)	(0.398)
Personal consumption expenditures		−0.040		−0.953
		(−1.124)		(−1.807)
Constant term	0.008	0.009	−0.469	0.390
	(0.099)	(0.110)	(−1.020)	(0.600)
Adjusted R^2	0.255	0.258	0.485	0.520
F statistic	4.416	3.985	6.813	6.733

NOTE: An asterisk denotes that the sign of the coefficient is paradoxical — does not agree with its expected sign. Figures in parentheses are t-values. Table 1 provides sources for the data.

A definition of each factor input in terms of dollars (pesos) of gross output is given below.

Capital services = dollars (pesos) of capital depreciation;

Research workers = man-years of scientists and engineers employed in research and development;

Other workers = man-years of all workers (excluding research and professional workers);

Professional workers = man-years of professional workers (excluding research and professional workers);

Nonrenewable natural resources = value of direct and indirect inputs from mining sectors;

Renewable natural resources = value of direct and indirect inputs from agriculture, forestry, and fishing sectors;

Personal consumption expenditures = value of production of goods and services needed directly and indirectly to meet existing levels of personal consumption.

Restructuring the Model

It is difficult to rationalize these results. The factor proportions theory does make several assumptions that are unrealistic in an empirical test. Some of these could distort but not reverse the theory's predictions. There are, however, other assumptions which may be violated that could account for paradoxical results. These concern countries' preferences, factor intensity reversal, and international factor mobility. Each of these will be discussed below.

Homothetic preferences between countries are obviously an unrealistic assumption in an empirical test as different countries have different tastes.[7] It was believed that the effects of different tastes could account for some of the paradoxical signs of the regression coefficients. The expected signs of the coefficients were determined by a stock definition of factor endowments which measures only the physical abundance of each factor of production. This definition of factor endowments fails to account for the possibility that a country could have a very strong demand for goods that intensively require physically abundant factors of production. This could result in making those factors economically scarce. For example, in the United States, the negative regression coefficient for nonrenewable natural resources could be attributed to the fact that consumers have an extremely high demand for goods which require large amounts of this factor of production. Similarly, unskilled labor could be one factor of production falling into this category in the case of the Philippines.

One method of incorporating tastes into the multi-factor model is to include a measure of the direct and indirect domestic personal consumption expenditures per dollar (peso) of gross output, C_i/X_i.[8] This variable was added to the original model in an attempt to determine whether taste might be a strong enough factor to influence the pattern of a nation's exports or imports. The empirical results of this model are presented as equations (2) and (4) in Table 2. As can be seen, the inclusion of tastes does not improve the results of the original equations. All paradoxical signs remain, except for nonrenewable resources in the Philippines. In effect, the measure of tastes,

[7] As noted by Bhagwati (1964, p. 19), even if "identical tastes" are defined as identical preference maps, homothetic preferences may not occur if countries consume at different income levels.

[8] Intuitively, it might seem that $C_i/\Sigma C_i$ would provide a more accurate estimate of the influence of tastes; however, this variable would be extremely sensitive to the sectoral classification.

C_i/X_i, does not behave as expected. Of the 12 correlations between C_i/X_i and factor requirements in the two countries, only five correlations exhibited the sign expected from assumed preferences and only two correlations were statistically significant. Thus, the effects of differing tastes not only fail to explain the paradoxical results of the multi-factor model, but preferences themselves fail to exhibit the expected pattern.

The possibility of factor intensity reversals is another problem which could account for the unexpected results of the multi-factor model. As more factors of production are incorporated into empirical tests, the number of possible combinations for substituting one factor of production for another is greatly increased. This apparently increases the possibility of factor intensity reversals. However, the multi-factor model may actually reduce the problem of factor intensity reversal because it more accurately specifies the production relationships. The omission of relevant factors of production can cause production functions to differ internationally leading to factor intensity reversal. Ball (1966) showed that this was the case when natural resources were omitted in a comparison of the factor intensity of Japanese and United States industries. Further, both Yahr (1968) and Lary (1968) independently showed that the possibility of factor reversal is reduced when human capital is incorporated in the analysis. Unfortunately, it is hard to determine how important a problem this may be because of the difficulty of empirically estimating the incidence of factor intensity reversals when several factors of production are used. Hopefully, inclusion of two forms of natural resources and carefully specified labor components negated the possibility of factor intensity reversals in the present model.

Finally, the factor proportions theory unrealistically assumes that factors of production are not mobile internationally. If factors are mobile internationally then the mechanism for overcoming differences in factor endowments might be factor movements instead of international trade. This could be true with labor, particularly the more skilled classes. Undoubtedly, the most important form of factor mobility involves capital in the form of direct foreign investment. Industries in developed countries that face rising labor costs have an incentive to produce in low wage rate less developed nations. They may sell their products in the home country's established markets. This could account for the paradoxical empirical test results. In the home country, these goods might represent paradoxically capital intensive exports. This is true if imperfect knowledge causes the foreign investors to maintain more capital intensive production processes than are typical of the foreign country. A full discussion of direct foreign investment is beyond the scope of this

paper but further research on this topic may hold the key to explaining the paradoxical results that have been found in so many empirical tests of the factor proportions theory.

Conclusions

The factor proportions or Heckscher-Ohlin theory remains the most generally accepted and widely taught theory of international trade. Its prediction that a country will export goods which intensively utilize that country's relatively abundant factor of production is so intuitively plausible as to be almost beyond question. Yet, the factor proportions theory has not been validated empirically and continuing research indicates that such validation is not on the immediate horizon.

If the factor proportions theory is to be a useful structural theory of international trade, it must be supported by empirical evidence. Yet, a variety of tests, beginning with Leontief's pioneering work, have failed to provide this support. It could still be a useful theory if causes could be identified which explain why the logical results of this theory are not supported empirically. Researchers in the area of trade have suggested several such causes. The multi-factor model of trade presented in this study incorporates the most promising of these into a testable, multi-good, multi-factor, two-country version of the factor proportions theory. It was hoped that empirical tests of this more elaborate trade model might reconcile the paradoxical test results of the more simplistic two-factor model.

The results of this model were disappointing. This indicates that the oversimplification of previously tested models was not the sole cause of their seemingly implausible conclusions. The paradoxical results still occur. In addition, new paradoxical relationships were identified. The findings of this study provide few definitive guidelines in the development of a more refined empirical test. One valuable, but often overlooked, benefit of research, however, is to disprove and discard causal factors previously felt to be important. The incorporation of natural resource endowments, a more complete breakdown of labor inputs, and domestic consumer preferences did not add to the explanatory power of this model, indicating that future research might more profitably investigate other possibilities.

Further research needs to be conducted incorporating international factor mobility and factor intensity reversals into a testable model of the factor proportions theory. This will be no easy task.

Measurement problems abound and the complexity of such a model would rob present trade theory of its main quality — simplicity. However, the simplicity of the factor proportions theory, as it is now used and taught, leads one to accept deceptively plausible but totally unrealistic conclusions. The goal of a good theory is to be simple, useful, and reliable. The factor proportions theory has not yet achieved this goal and the results of the present study provide no indication that it will.

While efforts to develop an improved trade model were unsatisfactory, the study did reveal valuable implications for policymakers. Development economists promoting "aid through trade" often suggest that developing nations specialize in labor intensive goods under the implicit assumption that this is where they have a comparative advantage. Using the Philippines as a country having characteristics typical of developing nations, this study demonstrates that comparative advantage cannot be defined in terms of labor intensity alone. On the other hand, a recurring political issue in many developed nations is the protection of domestic employment against "cheap foreign labor" by selective tariffs. This may represent a rational, although nationalistic, action of economic self-interest in certain industries, but the tests conducted in this study indicate that the employment potential of exports far exceeds that of import replacement in the United States.

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