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FOREIGN TRADE AND INCOME DISTRIBUTION: THE CASE OF BRAZIL

Benedict J. Clements and Kwan S. Kim

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Benedict J. Clements is Assistant Professor of Economics at Providence College, Providence, Rhode Island. Among his research interests are stabilization policy in Latin America and the impact of trade and development strategies on poverty and income distribution.

Kwan S. Kim is Professor of Economics and faculty 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 published extensively in the areas of trade and development, and planning and industrialization, with a special interest in East Africa, East Asia and, recently, Mexico. He is editor of Papers on the Political Economy of Tanzania and Debt and Development in Latin America, and his recent writings include Política industrial y desarrollo en Corea del Sur (Mexico City: NAFINSA and UNIDO, 1985).

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ABSTRACT

This paper uses a modified input-output model simulation to examine the effects of alternative trade strategies on income distribution in Brazil. The strategies under consideration are export expansion, import substitution, and expansion of the nontradable sector. The main results show that export expansion does produce a more equal income distribution than the alternative strategies, but only slightly more so. In particular, the income generated through production of industrial goods exports--the fastest growing segment of Brazilian exports--is not much more equally distributed than that generated by other strategies.

RESUMEN

Este trabajo emplea una simulación de modelo de insumo/producto para examinar los efectos de estrategias alternativas del comercio exterior sobre la distribución de ingresos en Brasil. Las estrategias puestas a consideración son: la expansión de exportaciones, sustitución de importaciones y la expansión del sector no comerciable. Los resultados principales muestran que la expansión de exportaciones produce una distribución de ingresos más equitativa que las estrategias alternativas, pero solo ligeramente. En particular, el ingreso generado mediante la producción de productos industriales de exportación--el segmento de exportaciones brasileñas de más rápido crecimiento--no es mucho más equitativamente distribuido que aquellos generados por medio de otras estrategias.

Introduction

Foreign trade has always played a critical role in Brazilian development strategies. From the free-trade policies of the nineteenth century to the conscious export promotion of the 1970s, international trade policy has conditioned and shaped the development of the Brazilian economy. With debt-servicing payments as burdensome as ever, the generation and saving of foreign exchange through exports and import substitution is of paramount importance.

While this remains a necessary objective of government policy, the transition to democracy in Brazil will surely heighten debate over the distribution of income. The government's wage-setting policies became less repressive during the 1970s, but in spite of this the already highly unequal distribution of income grew even worse. The share of the lowest 50% of the population decreased from 15.62% to 14.56% between 1970 and 1980, while the share of the top 10% increased from 46.36% to 47.67% (Baer, 1983: 141). Brazil faces the challenge of fashioning policies that not only generate and save foreign exchange, but also provide a more egalitarian distribution of income.

This paper presents an assessment of the relative abilities of different trade strategies to achieve this objective. The authors present an analysis of the impact of export promotion (EP) and import substitution (IS) on size income distribution and income generation for the poor. The impact of the expansion of domestic demand (DD) is also included for purposes of comparison.

Previous studies of Brazilian trade "structures"[1] have concluded that Brazil's exports are more intensive in low-paid, unskilled labor than its import substitutes (Tyler, 1976; Costa Rego and Zaghen, 1979; Carvalho and Haddad, 1980). On the basis of these results, which are consistent with orthodox trade theory, it is tempting to conclude that a larger share of the income generated through EP accrues to lower income groups than that created with IS. Such a

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[1] By "trade structure" is meant the composition of the products that constitute the basket of exports, import substitutes, or nontraded goods being considered.

conclusion would be premature, however. In the face of imperfect factor markets, it is possible that the same sectors that generate large amounts of employment (in terms of man-hours per unit of output) for low wage workers also generate a relatively large amount of profit, due precisely to the fact that lower wages prevail in traditional export sectors. Thus, IS manufacturing sectors that are not employment intensive, yet pay high wages, may be characterized by a functional distribution of income that leaves less capitalist surplus than in export-oriented sectors. Hence, the impact of trade structures on size income distribution must be assessed empirically; the most employment-intensive sectors (in terms of labor requirements per unit of output) may not perform the best on distributional grounds.

This paper is organized as follows. First, the model used to quantify the impact of trade structures on distribution is presented. Second, data and method are described. Third, empirical results are given, followed by a discussion of policy implications and a conclusion.

Description of the Model

The main purpose of the model is to quantitatively assess how the income generated from the production of exports, import substitutes, and nontraded goods is distributed to different size income groups.[2] An open-ended, input-output technique is used, so as to capture both direct and indirect linkage effects. In addition, two modifications to the simple input-output framework are employed. An endogenous consumption function is introduced so as to capture both interindustry and Keynesian multiplier effects. Furthermore, consumption is disaggregated by income group, reflecting the different consumption patterns of the "rich" and the "poor." Secondly, following Kim and Turrubiate (1984), the model allows for substitution possibilities

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[2] It should be noted that a complete analysis of the impact of trade strategies on income distribution involves factors beyond a simple consideration of the impact of trade structures. The implementation of trade strategies often involves the use of tariffs, taxes, subsidies, and other instruments that have their own separate effect on income distribution.

between domestic and imported intermediate inputs. With these modifications, we obtain a more complete picture of the multiplier effects of increased production under various trade structures.

Structure of the Model

Keeping in mind that the dimensions of the vectors represent the number of sectors unless otherwise stated, we start from the balance equation in the input-output system that states that for any sector, domestic output X is the sum of intermediate goods demand AX and final demand F, minus imports:

$$X = AX + F - M \qquad (1)$$

where A is a matrix of technical coefficients inclusive of imported inputs. Imports [3] are given a negative sign to reflect the fact that they represent that part of demand that does not accrue to domestic producers.

Imports consist of final imports, MF, and intermediate imports which are assumed to be complementary with domestic production, thereby depending on the level of industry output:

$$M = Mf + AmX \qquad (2)$$

where Am is a matrix of intermediate import coefficients.[4]

Let income and the distribution of income be determined by the amount of value added in each sector that accrues to each income group:

$$Y = AyX \qquad (3)$$

where Y is a vector of incomes by size income group, and Ay a matrix of distribution coefficients whose element (nj) shows the percentage of direct income generated for income group n per unit produced of sector j's output.

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[3] Imports are valued c.i.f. plus duties in order to ensure consistency between the row sums and the column sums in the input-output system.

[4] Consumer and capital good imports are thus exogenous to the model. In 1983 consumer good imports were roughly 5% of total imports, while capital goods represented just 18% of the total. Thus, the treatment of these imports as exogenous will not affect the model, given the overwhelming importance of intermediate goods in Brazil's current basket of imports.

Final demand, F, is disaggregated into the part exogenously given, F*, and the part endogenously determined by the level of income. Specifically, we assume that the endogenous demand (consumption) function differs from one income group to another.

Denoting by Ac a consumption matrix whose typical element (jn) shows the marginal propensity of income group n to consume sector j's output, and in view of (3), we can express our consumption function in linear form as

$$C = a + AcAyX \qquad (4)$$

where a, the intercept vector, can be thought of as part of exogenous final demand.[5] The advantage of specifying consumption functions with marginal rather than average propensities is that this allows for varying income elasticities of demand.

Domestic final demand (Fd) is thus

$$Fd = (F^* - Mf) + AcAyX \qquad (5)$$

Designating (F* - Mf) as E,[6] the exogenous component of domestic final demand, we have

$$X = AX + AcAyX - AmX + E \qquad (6)$$

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5 Note that this vector includes the exogenous consumption intercept, a, from equation (4).

6 Note that a reduction in final import demand, Mf, will in itself not affect income accruing to domestic producers.

Substituting terms, we can see that the solution of X is

$$X = (I - A + Am - AcAy)^{-1} E \qquad (7)$$

The impact of EP and IS on output can be examined by simulating the impact on sectoral output of an exogenous increase in the demand of exports and import substitutes, respectively. That is, we can alternatively replace the vector of exogenous demand in the above equation (E) with vectors specifically representing exports and import substitutes.

Premultiplying the above inverted matrix in (7) by the matrix of distribution coefficients, we have

$$Y^* = Ay (I - A + Am - AcAy)^{-1} E \qquad (8)$$

where Y* now represents the vector of income classes in which each element measures the income accruing to income group n per unit of spending on trade category j. Each column vector of the size distribution matrix, Y*, can be used to compute a Gini coefficient associated with the given trade structure,[7] as well as to calculate total income destined for the poor. Following Pfefferman and Webb (1979), we define the poor as those earning less than two times the minimum wage.[8]

A comparison of the impact of trade structures on income can be made by replacing, one at a time, the final demand vector in (7) with an appropriate trade composition vector. For instance, the process of import substitution in our calculations is taken as a decision to replace imports by domestic production for an equivalent amount of output. The unit of comparison utilized in this study is a one million cruzeiro[9] basket of either exports, import substitutes, or domestic final demand goods. The basket is calculated as a weighted average of the spending on the category of goods being considered, weighted by the observed commodity composition in

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7 We use the standard formula to calculate the Gini coefficient from Lorenz curve data. See Nugent and Yotopolous (1976: 239-241) for details.

8 According to the demographic census of 1980, this accounts for approximately 67% of the economically active population.

9 The cruzeiro was Brazil's major currency unit until early 1986 when the cruzado was introduced.

that category.

Treatment of Intermediate Imports

An important question in addressing the income-creating capacity of any trade strategy is the degree of substitutability of domestic intermediate inputs for imported ones. This, in turn, depends on the cost and availability of imports vis-à-vis domestic inputs. If most intermediate input needs are met by imports, an expansion of final demand will lead to relatively little extra income creation through the impact of backward linkages. If domestic firms supply all inputs, on the other hand, no income will be lost through the leakage of imports.

To address this indeterminacy with respect to intermediate imports, upper and lower bounds for income creation are calculated. The upper-bound case refers to the situation where all intermediate inputs are supplied domestically; this corresponds to the case where there is total import substitution in intermediate goods. The lower-bound scenario depicts the situation where all input requirements are met by imports.

Let us outline the scenarios possible under alternative assumptions regarding intermediate imports.

Case I: $Am = Am, Y(I) = Ay\ (I - A - AcAy + Am)^{-1}\ E$

Case I assumes that imports meet intermediate input demands at the same ratio as given by the input-output tables. From here on this will be referred to as the "standard" case.

Of interest is a comparison of our standard case with the case in which there are no endogenous consumption effects:

Case II: $Am = Am, Y(II) = Ay\ (I - A + Am)^{-1}\ E$

The lower-bound scenario is given by Case III:

Case III: $Am = A, Y(III) = (Ay)\ E$

In this case the only income effects are direct payments to factors of production involved in the final stage of production. As calculated above, endogenous consumption effects are somewhat arbitrarily ignored. By comparing Cases I, II, and III we get an idea of how the model's results

vary when we include/exclude interindustry and consumption multiplier effects.

Case IV: $Am = 0, Y(IV) = Ay (I - A - AcAy)^{-1} E$

All intermediate inputs are met domestically in Case IV.

Data and Methodology

The model employed here requires four different kinds of data: 1) input-output matrices; 2) consumption functions; 3) data on the distribution of factor income (wages, payments to the self-employed, and profits) by sector to size income groups; and 4) trade data. The 1975 input-output tables recently released by the Instituto Brasileiro de Geografia e Estatística (IBGE) are utilized for the interindustry matrices in the model. The consumption functions found in matrix AC^{10} are based on estimates by Sadoulet (1983: 130-148). Regarding the distribution of value added to different factors, payments by sector to wages, capital (value added accruing to capital), and the self-employed are given in the input-output tables.

Data on wage distribution to size income groups by sector are taken from the 1980 Relação Anual De Informações Sociais (RAIS), which is generally considered the best source of data on wage earnings in Brazil. 1980 demographic census data are used for agricultural sectors, however, due to the sparse coverage of agriculture in the RAIS. The census is also utilized to distribute payments by sector to the self-employed. All value added accruing to capital is distributed to the highest income class (defined as those earning above 10 times the minimum wage).

TABLE 1

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10 Sadoulet's data provides income elasticities of demand for each sector. These were converted to marginal propensities to consume by post-multiplication of the elasticity estimates by average propensities to consume. Consumption was made a function of labor income, that is, all profits were assumed to be saved. This assumption is justified on the basis of the low percentage of business profits that are distributed as dividends in Brazil.

Sectoral Composition of Trade Categories

Sectors	Exports	Import Substitutes	Domestic Final Demand Goods
Total	100.0%	100.0%	100.0%
Agriculture Primary Products*	7.4%	5.3%	4.9%
Processed Products	28.4%	3.3%	12.2%
Petroleum (unrefined)	0.0%	50.7%	0.0%
Other Industry	64.2%	40.7%	57.6%
Commerce, Transport, and Other Services	0.0%0.0%	25.3%	

* includes forestry, hunting, and fishing

Ideally, one should be able to distinguish sectors that could produce exports or import substitutes in the absence of market distortions and tariff and non-tariff barriers. Given the difficulty of this task, this paper follows the methodology of Barrantes Hidalgo (1985) by using the observed commodity composition of trade to construct the trade structures. The domestic demand final demand vector was defined to include all final demand that was not exported or imported.

Statistics on exports and imports are available from IBGE. Data from 1979 are used, as this is the latest year for which a breakdown of products compatible with the classification system used in the input-output tables is available. These data are fairly representative of the current composition of exports and imports; for example, while industrialized goods accounted for 61.2% of total exports in 1983, they were 57.3% of the total in 1979. With respect to imports, the 1979 basket differs from the current composition, as petroleum imports have increased in importance since 1979. The vector of import substitutes was reweighted in light of this, increasing the representation of petroleum.

The domestic demand vector was derived from the 1975 input-output tables. 1975 net exports were subtracted from final demand to derive the basket of domestically demanded goods and services.

One restrictive assumption of the input-output framework employed here relates to fixed technical and distributional coefficients, as well as unchanged relative prices. Constant costs are also assumed, implying no capacity constraints. In the face of capacity constraints, increases in demand for a sector's output can be reflected in price increases and relative price changes. When this occurs it is difficult to foretell the impact of increased demand on resource allocation, sectoral output, and income distribution. Given that much of Brazilian industry has been characterized by excess capacity in the 1980s, except for 1985 and 1986, the assumption of "no capacity constraints" is acceptably realistic. In light of this generalized excess capacity, the assumption of constant costs is not overly restrictive for the relevant range of marginal increases in output feasible under alternative trade strategies.[11]

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[11] Even if capacity constraints come into play, oligopolistic pricing behavior--such as pricing based on a fixed markup over prime costs--can prevent relative price changes from having any significant impact on income distribution (Gibson, Lustig, and Taylor, 1986).

The impact of trade structures on size income distribution is measured in this paper in terms of the Gini coefficient. These Gini coefficients are based on data that calculate what percentage of the economically active population earns what percentage of income. "Income shares" for each size income group per unit increases of final demand under each trade category are provided by our simulations. Population weights (showing what percentage of the economically active population belongs to each size income group) are based on the 1980 demographic census and are assumed to be constant for the purposes of this study. This is legitimate in as much as small increases in output are being examined; if large increases in output are analyzed, changes in changes in population weights might occur, changing the percentage of the population classified as "poor." For example, if a large number of workers move from low-paying export agriculture to high-paying industry, the percentage of workers classified as poor could change, depending on how many workers were actually absorbed into the industrial sector. Hence, our results may overstate the adverse impact of high-paying industrial sectors on income inequality, as our Gini coefficients do not take into account this upward mobility of the population. This need not concern us, however, as the low labor absorption associated with many high-paying industrial sectors limits the impact of sectoral expansion on population weights. Nevertheless, the results presented here should be interpreted in light of these caveats.

Empirical Results

Trade Structures and Income Generation for the Poor

The impact of a one million cruzeiro increase in demand for exports, import substitutes, and final demand domestic goods on income for the poor is reported in Table 2. The four cases (I-IV) outlined in the method section regarding the treatment of intermediate imports are reflected in the table results. Table 2 shows that under Cases I, II, and IV, EP is superior to IS and DD in terms of generating income for the poor. If only direct income creating effects are considered,

however (Case III), DD is superior to EP.

TABLE 2

Income Generation for the Poor Per Unit Increase in Demand: Alternative Trade Structures

(Unit: One Million Cruzeiros)

	EP	IS	DD
Case			
I	.100	.037	.079
II	.086	.029	.065
III	.024	.015	.035
IV	.104	.040	.083

This result is not surprising, as much of the value added in Brazil's exports accrues to intermediate suppliers; this is especially true of agriculturally related exports, such as textiles and footwear. Sectors included in the domestic final demand bundle, such as services, on the other hand, have relatively few backward linkages, yet strong direct income creating effects. These results are consistent with those of Kim and Turrubiate (1984: 270) who found that, considering only direct effects, DD is superior to EP in terms of income generation for the poor.[12]

The difference between exports and import substitutes in Table 2 is lowest under our lower-bound income generation scenario (Case III), as EP generates just 38% more income

[12] It is important to note that our model does not take into account some of the more indirect ways in which EP and IS may contribute to income growth of the poor, such as through the release of the foreign exchange constraint.

destined for the poor than IS. In all other cases, EP is vastly superior to IS, creating at least twice as much income. Also of note in Table 2 is the relatively small impact of consumption multiplier effects on income generation for the poor, as seen through a comparison of the results for Case I and Case II. In general, adding Keynesian consumption multiplier effects to the model has only a modest impact on overall income generation, due to the fact that 1) our model assumes that consumption is only a function of labor income (wages and income of the self-employed), that is, all capital incomes are saved; and 2) the share of the labor income in value added is relatively small. As will be explained later in this paper, this relatively small parcel of labor income in value added plays an important role in determining overall size income distribution.

Trade Structures and Size Income Distribution

The Gini coefficients associated with a unit increase in demand under alternative trade structures are reported in Table 3. Considering only direct income effects (Case III), DD results in the greatest income equality (lowest Gini) and IS the most inequality. In Cases I, II, and IV, EP entails greater equality than DD or IS. In all cases IS leads to the greatest degree of income inequality. Comparing Case I and Case II (no endogenous consumption effects), we can see that consumption effects tend to narrow the differences in Gini coefficients between EP and IS, while leaving DD's coefficient unchanged.

A more consistent story comes out of Table 3: EP results in less inequality than DD or IS, but the difference (in terms of Gini coefficients) is quite small. Based on this it appears that increasing the share of exports in GDP would not significantly ameliorate Brazil's severe income inequality.

TABLE 3

Gini Coefficients under Alternative Trade Structures--Cases I-IV

	EP	IS	DD
Case			
I	.816	.893	.833
II	.812	.900	.833
III	.859	.914	.832
IV	.823	.893	.839

Since our results are not greatly affected by varying assumptions about the endogeneity of consumption nor the treatment of intermediate inputs, greater attention is now turned to the standard case, Case I. The distribution of income to size income groups under Case I that generates the Gini coefficients in Table 3 are reported in Table 4.

The Gini coefficients reported in Table 4 are higher than those derived from recent household census and survey data.[13] This is to be expected, however, as household income data do not account for undistributed business profits. Furthermore, Brazilian census data are known to understate personal income, as measured by the national income accounts; some attribute this to an understating of capital incomes in the household censuses (Lluch, 1982: 140-148). Given that capital income accrues largely

TABLE 4

[13] 1980 demographic census data yield a Gini coefficient of .625, for example, for the economically active population.

Size Income Distribution under Alternative Trade Structures

Income Group	Income Shares		
	EP	**IS**	**DD**
Less than 1/2 minimum wage	.007	.002	.003
1/2 - 1 MW	.031	.009	.018
1 - 2 MW	.060	.028	.058
2 - 3 MW	.034	.022	.042
3 - 5 MW	.042	.032	.052
5 - 10 MW	.045	.038	.055
10 or greater	.781	.870	.771
Gini coefficient	.816	.893	.833

to the rich in Brazil, it is logical that our results portray a greater degree of inequality than that depicted by household censuses and surveys.[14]

So far, results have been presented for the current basket of exports, import substitutes, and domestic final demand goods, with diverse sectors within each trade category being lumped

[14] Using business income tax data on profit by sector from Calabi et al. (1981) instead of input-output data did not qualitatively affect our results. The data from Calabi give profit as a percentage of sales by sector, subtracting for depreciation. The percentage of profits implicitly accruing to multinational and state capital (and hence not private Brazilian citizens) was also subtracted on a sector by sector basis. Using these data, Gini coefficients for EP, IS, and DD of .656, .756, and .692 were obtained. Note that these Gini coefficients are fairly close to those computed from recent household surveys, confirming the validity of our model.

together to form an "average" basket. Additional insights can be gained through a more disaggregated approach. In light of this, each trade category will be divided in the following way: Exports--agriculture[15] and industry; Import Substitutes--petroleum and non-petroleum; Domestic Final Demand--agriculture, industry, and services. For each of these disaggregated categories an "average" weighted basket can be constructed as was done for the more aggregated classification.

Tables 5-8 display various distributional results associated with a unit increase in final demand for each of the disaggregated categories.[16] One of the most noteworthy aspects of the results is the sharp urban-rural dichotomy they portray, as income is distributed much more equally in agriculture than in industry and services under both EP and DD.

Of special note also is the relatively high degree of equality in the distribution of wages in agriculture, especially in export agriculture (Table 7). This can be explained by the unskilled nature of agricultural labor and its concomitant low rate of remuneration. Although capital income/labor income ratios are higher in export agriculture, the overall Gini coefficient is lower for export agriculture than its nontraded counterpart (Table 6). Thus, greater capital intensity (higher capital income/labor income ratios) are not necessarily associated with greater income inequality.

The comparison of oil vs. non-oil import substitutes demonstrates that the adverse impact of IS on income distribution is aggravated by the extremely high Gini coefficient associated with petroleum extraction (.927). As oil represents 51% of the current basket of imports, this significantly influences the overall Gini coefficient for IS

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15 Agriculture here includes both primary and processed products, as well as forestry, hunting, and fishing. All food industry products are classified here as "agricultural," since this is more consistent with the treatment of agricultural products in the trade data collected by the CACEX.

16 Since our results are not greatly affected by varying the treatment of intermediate imports, from this point onward all results are computed assuming constant import ratios, or Case I.

TABLE 5

Income Generation for the Poor:

Alternative Trade Structures According to Disaggregated Categories

Disaggregated Group	EP	IS	DD
Agriculture	.171		.161
Primary Products*	.213		.225
Processed Products	.162		.142
Industry	.062		.061
Services			.066
Oil		.016	
Non-oil		.059	

* includes forestry, hunting, and fishing

TABLE 6

Gini Coefficient:

Alternative Trade Structures According to Disaggregated Categories

Disaggregated Group	EP	IS	DD
Agriculture	.760		.764
Primary Products*	.718		.707
Processed Products	.768		.781
Industry	.855		.848
Services			.856
Oil		.927	
Non-oil		.855	

* includes forestry, hunting, and fishing

TABLE 7

Gini Coefficients of Wage Distribution:

Alternative Trade Structures According to Disaggregated Categories

Disaggregated Group	EP	IS	DD
Agriculture	.198		.262
Primary Products*	.110		.147
Processed Products	.216		.296
Industry	.558		.569
Services			.607
Oil		.688	
Non-oil		.583	

* includes forestry, hunting, and fishing

TABLE 8

Functional Income Distribution:

Alternative Trade Structures According to Disaggregated Categories

Disaggregated Group capital income/labor income ratios**	EP	IS	DD
Agriculture	1.87		1.74
Primary Products*	1.55		1.35
Processed Products	1.95		1.90
Industry	2.27		1.90
Services			1.81
Oil		5.88	
Non-oil		2.17	

* includes forestry, hunting, and fishing
** labor income is defined as payment to wage earners and the self-employed.

reported in Table 4. Wages are generous in the petroleum sector, leading to a comparatively high Gini coefficient of wage distribution (.688). Thus, it is likely that the significant strides made in Brazil toward oil self-sufficiency since the mid-1970s have had a perverse impact on the distribution of income.[17]

A surprising feature of our results is the relatively poor performance of the service sector in generating income for the poor. The nontraded service sector distributes a relatively large portion of its wage income to higher income groups. This entails a higher Gini coefficient of wage distribution for services (.607) as compared with industry (.569). Even though industry is more capital intensive than services (Table 8), the overall Gini coefficient is higher in services than industry (.856 vs. .848). As defined here, the service sector includes many subsectors that do not belong to the "informal" sector, such as financial services, communications, and transportation.[18] Nevertheless, the results are surprising in light of the usual view that industry and industrial growth are the villains in the "deteriorating distribution of income" story common to Latin American nations.

One cannot be so sanguine about the assessment of the distributional consequences of industrialization when a comparison with agriculture is made, however. Both EP and DD agriculture distribute their income in a far more equal fashion than either services or industry.

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[17] It is important to remember that this simulation is carried out under the assumption that all capitalist surplus is distributed to Brazilian households. In the case of petroleum it is hard to gauge exactly how much of this goes to private citizens since Petrobrás, as a state controlled enterprise, has a monopoly on oil extraction. While being a state-run enterprise, some of Petrobrás's assets are held privately in the form of stock ownership. The degree of inequality resulting from oil production depends on how much of this surplus is distributed to these shareholders. However, the very high Gini coefficient of wage distribution with oil production suggests that oil production will have an unequalizing effect on income distribution, even if a very small percentage of the surplus is distributed.

[18] The informal sector is very well incorporated into the Brazilian input-output tables. Data for the service sectors are based on a separate census made of services, which has excellent coverage of small sized firms.

Clearly, then, promotion of agriculture instead of industry will have a favorable impact on size income distribution.

Policy Implications and Conclusions

It is clear that income is distributed more equally under EP than IS or DD. Using a variety of assumptions regarding intermediate imports, EP is consistently superior on distributional grounds; EP is also better than IS and DD with respect to income generation for the poor. Does this imply, however, that raising the share of exports in GDP will improve the distribution of income in Brazil? There are two major reasons to think this is not the case:

1) While exports perform better than import substitutes and domestic final demand goods on distributional grounds, the difference (in terms of Gini coefficients) is quite small. This is especially true if one looks at the distributional performance of the fastest growing segment of exports, industrialized goods. In fact, the income generated through production of industrialized exports is distributed more unequally than the income from the average basket of domestic final demand goods, with Gini coefficients of .855 and .833, respectively. Given the ever-increasing role of industrialized goods in the export basket, it is unlikely that future EP will have a favorable impact on income distribution.

2) Brazilian policies to promote exports tend to favor large firms, which do not do as well in distributional terms as small or medium-sized firms. Approximately 90% of export subsidies are appropriated by firms in the largest size category (Braga, 1981: 799). These firms tend to use more capital-intensive techniques than those employed by smaller or medium-sized firms.[19] This suggests that the empirical results generated by our model may overstate the favorable impact of EP on income distribution, since the model is built on survey date reflecting industry averages. In as much as exports are produced by above-average sized firms, the results reported in this paper may be biased in favor of exports.

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19 See, for example, IBGE (1984).

One major finding of this study is that, based on our disaggregated analysis, Gini coefficients are high across almost all sectors, varying very little from sector to sector. What this suggests is that the size distribution of income is not solely affected by the sectoral composition of the economy (i.e., whether the economy is relatively intensive in agriculture, industry, etc.). The struggle between labor and capital over the functional distribution of income in all sectors is also an important determinant of size distribution. As one can see from Table 8, functional income distribution greatly favors capital in Brazil, as across all the trade and commodity categories its share of total income is at least 60%. The importance of functional distribution on overall size distribution in Brazil has been noted elsewhere in the literature; for example, the small improvement in size distribution from 1974 to 1980 has been traced to the less repressive wage policy enforced by the government during this period (Camargo 1984). Hence, improvements in the well-being of the poor and decreases in overall income inequality can be achieved by shifting the functional distribution of income in favor of unskilled labor. Given the dominant role of functional shares in determining income distribution, trade strategies play but a modest role in determining the size distribution of income in Brazil.

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