Equity, Efficiency, and Social Welfare in Latin America

Richard Weisskoff
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Disciplines
Agribusiness | Behavioral Economics | International Economics | Social Welfare

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Forthcoming: Review of Economic Development
Abstract

Equity, Efficiency, and Social Welfare in Latin America

Richard Weisskoff
Iowa State University*

This paper applies four different measures of equity, efficiency, and neoclassical social welfare to data from Latin American countries, cities, and sectors. The more important findings deal with the change in equity in the intra-country, inter-country, and sectoral (nonagricultural vs. agricultural, urban vs. rural) comparisons. Having presented the empirical results, the author challenges the view that social welfare is measurable solely as a function of equity and efficiency and argues for a broadening of these narrow criteria.

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I. Introduction

The quest for an "index of social welfare" is an attempt to formalize a system for comparing the total material endowments of all the individual members of a society. But such comparisons require the acknowledgment of explicit rules or principles by which the true gains and losses which result from different policies of economic growth may be evaluated. In the theoretical literature, the arguments have taken the form of discussing the nature of transfers and compensation, the tangencies of "objective" optimality or efficiency criteria with some overall "normative" social criteria, and more currently, an emphasis on the absolute state of the poorest member of a society.1

Those concerned with economic development, however, had long held the view that growth would also lead eventually to more equitable distribution or that rising absolute income would itself compensate for any widening distribution of that income. Controversies have surrounded the very measurement criteria of "inequality": different measures measure different aspects of a distribution,2 and the empirical results derived from time-series and cross-section studies lend themselves to different interpretations.3 Does the size distribution of income deteriorate with capitalist growth? What factors make for a more egalitarian society during certain eras? Do the poorer countries

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*Iowa State University, Ames, Iowa, U.S.A. This paper is based on research carried out initially at the Harvard Project for Quantitative Research in Economic Development and then at the Yale Economic Growth Center. I would like to thank H. Chenery, A. Figueroa, K. Mera, and T. E. Weisskopf for comments. The author is solely responsible for the views presented here.
today demonstrate a less equal distribution than do the richer countries as a group?

Somewhat independent of empirical findings, development practitioners and promoters have come to suggest that there may indeed be an unbreachable contradiction between growth and equitable distribution. The supporting elements for these differences were generally cited in the mechanism of the savings propensities, the need to accumulate out of personal income, and the relentless impulse of the population to reproduce. But even this conventional wisdom is being inverted: equitable distribution and growth need not be self-opposing; indeed, capitalist growth is now to be seen as the hand-maiden of so-called social justice, and a new crop of macroeconomic models have been designed to trace the interactions of income-generation and income distribution. Policies such as land reform, export promotion and import substitution are "simulated" for their effect on family incomes; alternative distributions are "simulated"—through revolution or tax policies—to trace their impact on aggregate income, investment, consumption, imports and employment. Nevertheless, the fundamental question remains that of the connection between income growth and income distribution, especially when the "unevenness" of the benefits received by different members in different regions lies at the very essence of that growth.

This paper presents the results of applying several schemes for evaluating social welfare in terms of the level of income to families and the distribution of that income. Borrowing heavily on the early work of Mera (1967) and Aigner and Heins (1967), I apply a set of measures to time-series and cross-section data for several Latin American nations, sectors, and cities. The reader is forewarned that this author's own belief in the importance of equity as opposed to efficiency is somewhat frustrated by the system applied and the
results obtained here. To anticipate the conclusions, our measurement schemes consistently reveal that the gains in "social welfare" are the consequences of the benefits of increasing aggregate efficiency which affect the losses due to deteriorations in equality. This unsatisfactory finding may be due to the measurement technique and the traditionally narrow neo-classical criteria on which they are based. It is only in the hope that these criteria might be improved upon and with the full and explicit recognition of their limitations that these results are presented to the reader. Both the mechanical and philosophical limitations of the criteria are outlined in the conclusions, along with some indication as to the direction of their improvement.
II. The Social Welfare Function

At least two conventional avenues may be taken in the approach to neo-classical social welfare. The first is simply that the utility of individuals in society is determined by the absolute level of income (or consumption) of these individuals and that social welfare is simply the aggregate of individual utilities. As the absolute income of all individuals rises, regardless of the relative differences in their improvement, the overall social welfare of the community also rises. An alternative approach adds that individual utility is not merely a function of the one's own income but also of other members of the society. It is the relative, not absolute, income which determines the level of individual well-being, and social welfare is the summation of these interdependent utilities.

In the system presented here, social welfare is a combination of both conventional approaches. Following traditional consumer theory, an individual's income determines his utility independently of his relative position in society. Social welfare, however, is determined jointly as the total sum of all the individual utilities and by the equity implicit in the distribution of that income. Social welfare is seen as apart from and somewhat "above" the individual. A deterioration in social justice could thus result from the differential enrichment of a poor-but-equal society in which every member becomes absolutely better off in a material sense relative to his "old" position.

Following Dalton, equity is defined as the ratio of the "actual" social welfare to the potential or achievable welfare given current resources.

\[ E = \frac{W}{W^*} \]

where:
- \( W \) = actual welfare
- \( W^* \) = potential welfare
- \( E \) = equity ratio

The most "equitable" society is that in which actual welfare approaches the maximum potential welfare, and potential welfare is maximized when the pure
egalitarian ideal is achieved; that is, when all the members of a society receive equal incomes. Thus, equity may be thought of as an index which expresses the actual distribution of income, and actual welfare may be thought of as the product of this equity measure and of the total income (efficiency) irrespective of its distribution.

One common practice among development economists is their reliance on income per head as a crude index of actual social welfare. A country is thought to have "improved" under one alternative program if income has risen. Equity is thus assumed to be neutral and does not enter into the calculus of welfare. The adoption of an index of actual welfare which incorporates equity as an explicit factor frees the evaluator from relying on simple efficiency as the lone indicator of improvement or failure of a development program.

Following the conventional neoclassical properties of a social welfare function, both Mera (1967) and Aigner and Heins (1967) specify four general properties:

1) that the social welfare function be measured in actual units which can be compared between countries and regions, discountable over time, and yield transitive and consistent ordering;

2) that the function be nondiscriminatory and indifferent to the ordering of subgroups.

\[ W(u_1, \ldots, u_j, \ldots, u_N) = W(u_1, \ldots, u_k, u_j, \ldots, u_N) \]

where \( W = \) welfare function

\( u_j = \) utility of the \( j^{th} \) family.

3) that the social welfare function be bounded by zero at the lower tail and that negative values are not admissible; and

4) that the function be continuous and that an increase in any individual's utility contribute to an increase in total social welfare.
Mera imposes three further conditions. His welfare function must also be
5) differentiable to the second order; 6) neutral with respect to the total
population size
\[ W(u_1) = W(u_1, u_1, \ldots, u_1) \quad (i = 1, 2, \ldots, M) \]
and 7) homogeneous of the first order,
\[ \lambda W = W(\lambda u_1, \lambda u_2, \ldots, \lambda u_M) \quad \text{for } \lambda > 0. \]

One family of function which satisfies all the criteria takes the following
form:

\[ W = \left( \frac{M}{\sum_{i}^{M} u_i^q} \right)^{\frac{1}{q}} \quad (i = 1, 2, \ldots, M) \]

where: 
- \( W \) = level of social welfare
- \( u_i \) = utility of the \( i \)-th family
- \( M \) = number of families in the society
- \( q \) = parameter which may range from negative infinity to positive
  infinity

The function takes on familiar meaning when \( q \) has integral values: of -1, 0,
and +1, for any array of cardinal utilities.

\[ W_a = \frac{1}{M} \sum_{i}^{M} u_i = \text{arithmetic mean function, when } q = -1 \]
\[ W_g = \left( \prod_{i}^{M} u_i \right) = \text{geometric mean function, when } q = 0 \]
\[ W_h = \frac{M}{\sum_{i}^{M} (u_i)^{-1}} = \text{harmonic mean function, when } q = 1. \]

In addition to the first four properties listed above, Aigner also requires
that the welfare function be twice differentiable, but that the second deriva-
tive with respect to a change in individual utility be negative. Aigner's
social welfare function does not satisfy properties (7) and (8) above, and is
therefore sensitive to the number of individuals and to the utility scale.
One of Aigner's several functional forms is especially relevant to international comparisons and is more sensitive to changes as individual incomes are raised above an arbitrarily-established threshold or a minimal "poverty" line:

\[
W_R = \sum_{i=1}^{M} \frac{\theta u_i}{\theta + u_i}
\]

where \( W_R \) = Aigner's measure of social welfare
\( u_i \) = utility of the \( i^{th} \) family
\( M \) = number of families in the society
\( \theta \) = parameter.

The value of the parameter, \( \theta \), is set by the evaluator to represent an "acceptable standard" or "subsistence" level of living.\(^{12}\)
III. Properties of the Utility Function

The individual utilities which constitute the elements of social welfare conform also to the conventional theoretical properties:

1) uniformity

\[ u_i = u(x_i) \quad (i = 1, \ldots, M) \]

where \( x_i \) is the absolute income of the \( i^{th} \) family;

2) cardinality;

3) non-negativity (without which first-order homogeneity of social welfare would not hold);

\[ u_i > 0 \quad (i = 1, \ldots, M) \]

4) non-satiation or a positive marginal utility of income;

\[ \frac{\partial u_i}{\partial x_i} > 0 \quad (i = 1, \ldots, M) \]

5) second-order differentiability;

6) diminishing marginal utility with increments in income

\[ \frac{\partial^2 u_i}{\partial x_i^2} < 0 \quad (i = 1, \ldots, M) \text{ and} \]

7) constant elasticity of utility with respect to income

\[ \frac{\partial u_i}{\partial x_i} \cdot \frac{x_i}{u_i} = \eta \quad \text{where } \eta \text{ is a constant.} \]

Of the seven conventional properties above, perhaps (7) is the least acceptable. To the extent one believes in utility at all, we might expect the elasticity of the utility of income of the very poor to be significantly higher than the elasticity of utility of the rich. Nor is interdependence between families admitted in the utility or social welfare functions.

One class of utility function which satisfies the above conditions takes the conventional form:
(7) \( u_i = x_i^n \) \( (i = 1, \ldots, M) \)

where \( u_i \) = utility of the \( i^{th} \) family, \( x_i \) = income of the \( i^{th} \) family, and \( 0 < n < 1 \).

Substituting a utility function of equation (7) into the family of functions given in equations (3)-(6), results in a series of welfare equations which are maximized when all the individual recipients achieve identical or equal incomes. The corresponding equity ratio, \( E \), in equation (1) thus ranges from zero as the least equal to unity as the most equal for each of the corresponding welfare functions.
IV. Measuring Social Welfare

Comparisons of social welfare may be useful in evaluating the behavior of different societies or of a single economy during the course of its development. In the latter case, we should like to deflate the incomes from different years to a common base year and, in the former case, to a single international currency. Ideally, we should also deflate the incomes of individual recipients within the same country by a price index relevant for the bundle of goods purchased by that particular income class or geographical region. In practice, few of these demands can be met, especially for a wide range of countries.

Since we are attempting international and intertemporal comparisons, as in contrasting welfare for nations, regions, and cities, several adaptations of the basic data are necessary. First, we shall calculate the equity ratio in current prices on the basis of grouped income data by simply comparing actual to potential social welfare. Such an index is uncorrected for differential changes in relative prices for different income classes or regions in a given year or over time. But once the equity ratio is calculated, however, the potential welfare (efficiency) measure is then altered in midstream: the arithmetic mean of income is deflated to 1960 and then converted to U.S. dollar purchasing power equivalents to facilitate international comparisons. These G.D.P. per capita values expressed in U.S. dollars at Latin American weights and indexed (U.S.A. = 1.000) are then taken to represent country-wide efficiency, just as the equity ratio, calculated in current terms, represents country-wide equity. It is the hybrid product of these two measures—efficiency in constant international terms & equity calculated from the current local distributions—that represents the value of actual social welfare comparable for different countries in different years.
V. Results

A. Country-Wide Estimates

For eight different Latin American countries, the levels of equity, efficiency, and social welfare may be compared for at least one year, and in three of these countries for at least two different years.\(^{17}\)

The efficiency index (Table 1, column 1)—the measure of potential social welfare—is calculated as the arithmetic mean of national income in constant 1960 U.S. dollar equivalents. In Argentina, for example, real purchasing power per capita rose from $786 to $927 or 18 percent in eight years (lines 1-2); mean incomes in Brazil rose 33 percent between 1960 and 1970, and in Puerto Rico, incomes rose 68 percent from 1953 to 1963.\(^{18}\)

In all the countries for which time series are available, almost all the measures indicate a decline in equity with a growth in income. For example, geometric equity ($E_G$) for Argentina fell from .759 to .735 (Table 1A, col. 3, lines 1-2), corresponding to a decline in its rank from eighth to sixth (least equal) of the entire sample (col. 12). Only in the case of the Fishlow data for Brazil (lines 3-4), does the Aigner measure ($E_R$ - col. 5) reflect a rise in equity from .789 to .818, corresponding to a change in rank from second to fourth place (col. 14).

The indices of actual social welfare, calculated as the product of efficiency (col. 2) and a corresponding equity index (cols. 3-6), indicate an almost universal rise in welfare (cols. 7-10) and rank (cols. 16-19) over time. In only two cases—the geometric and harmonic welfare indices applied to the Fishlow data for Brazil (cols. 7-8, lines 3-4)—does actual social welfare decline; only in these cases do the losses in geometric and harmonic equity more than outweigh the gains in income. In all other cases, the growing income
### TABLE 1

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<td>Capita (1960 US$)</td>
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<td>GDP/ Capita</td>
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<tr>
<td>1.</td>
<td>1953</td>
<td>786 .277</td>
<td>.759 .646</td>
<td>.681 .594</td>
<td>.210 .179</td>
<td>.241 .163</td>
<td>4 8</td>
<td>10 8</td>
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<td>2.</td>
<td>1961</td>
<td>927 .327</td>
<td>.735 .616</td>
<td>.857 .532</td>
<td>.240 .201</td>
<td>.280 .187</td>
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<td>3.</td>
<td>1960</td>
<td>289 .102</td>
<td>.361 .251</td>
<td>.789 .476</td>
<td>.057 .026</td>
<td>.080 .049</td>
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<td>2 3 3</td>
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<td>4.</td>
<td>1970</td>
<td>383 .135</td>
<td>.393 .010</td>
<td>.818 .361</td>
<td>.053 .003</td>
<td>.110 .049</td>
<td>2 1 2</td>
<td>2 3 3</td>
</tr>
<tr>
<td>5.</td>
<td>1960</td>
<td>289 .102</td>
<td>.637 .420</td>
<td>.814 .506</td>
<td>.065 .043</td>
<td>.083 .032</td>
<td>1 2 2</td>
<td>2 3 3</td>
</tr>
<tr>
<td>6.</td>
<td>1960</td>
<td>383 .135</td>
<td>.655 .371</td>
<td>.763 .438</td>
<td>.077 .059</td>
<td>.103 .039</td>
<td>2 3 3</td>
<td>2 3 3</td>
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<td>7.</td>
<td>1953</td>
<td>502 .177</td>
<td>.737 .573</td>
<td>.865 .377</td>
<td>.130 .005</td>
<td>.153 .102</td>
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<td>7 7 7</td>
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<tr>
<td>8.</td>
<td>1963</td>
<td>842 .297</td>
<td>.703 .205</td>
<td>.853 .364</td>
<td>.208 .189</td>
<td>.253 .102</td>
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<td>5 5 5</td>
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<tr>
<td>9.</td>
<td>1955-57</td>
<td>2,397 .845</td>
<td>.794 .626</td>
<td>.899 .642</td>
<td>.671 .529</td>
<td>.760 .543</td>
<td>7 10 9</td>
<td>9 9 9</td>
</tr>
<tr>
<td>10.</td>
<td>1960-62</td>
<td>2,837 1.000</td>
<td>.792 .612</td>
<td>.899 .640</td>
<td>.792 .612</td>
<td>.899 .640</td>
<td>8 9 7</td>
<td>9 9 9</td>
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#### B. Cross-Section of Country-Wide Indices

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<td>Capita (1960 US$)</td>
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<td>GDP/ Capita</td>
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<tr>
<td>1.</td>
<td>'53,'61</td>
<td>857 .328</td>
<td>.747 .631</td>
<td>.864 .583</td>
<td>.245 .207</td>
<td>.283 .093</td>
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<td>2.</td>
<td>'60,'70</td>
<td>336 .128</td>
<td>.477 .131</td>
<td>.804 .419</td>
<td>.061 .017</td>
<td>.103 .054</td>
<td>1 1 1</td>
<td>1 1 1</td>
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<tr>
<td>3.</td>
<td>'60,'70</td>
<td>336 .128</td>
<td>.601 .396</td>
<td>.789 .472</td>
<td>.077 .051</td>
<td>.101 .060</td>
<td>1 1 1</td>
<td>1 1 1</td>
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<tr>
<td>4.</td>
<td>1967</td>
<td>660 .252</td>
<td>.642 .449</td>
<td>.812 .500</td>
<td>.162 .113</td>
<td>.205 .126</td>
<td>5 5 5</td>
<td>5 5 5</td>
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<tr>
<td>5.</td>
<td>1964</td>
<td>364 .139</td>
<td>.526 .301</td>
<td>.760 .450</td>
<td>.073 .042</td>
<td>.106 .058</td>
<td>3 3 3</td>
<td>3 3 3</td>
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<tr>
<td>6.</td>
<td>1971</td>
<td>625 .239</td>
<td>.794 .656</td>
<td>.895 .631</td>
<td>.190 .137</td>
<td>.214 .151</td>
<td>6 10 9</td>
<td>9 9 9</td>
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<tr>
<td>7.</td>
<td>1963</td>
<td>542 .207</td>
<td>.596 .399</td>
<td>.784 .462</td>
<td>.123 .083</td>
<td>.162 .096</td>
<td>4 4 5</td>
<td>5 5 5</td>
</tr>
<tr>
<td>8.</td>
<td>1961</td>
<td>353 .135</td>
<td>.691 .303</td>
<td>.715 .384</td>
<td>.096 .041</td>
<td>.097 .052</td>
<td>2 2 3</td>
<td>2 2 3</td>
</tr>
<tr>
<td>9.</td>
<td>1963</td>
<td>672 .257</td>
<td>.720 .559</td>
<td>.859 .566</td>
<td>.185 .139</td>
<td>.221 .146</td>
<td>7 7 7</td>
<td>7 7 7</td>
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<tr>
<td>10.</td>
<td>'55-'60-2</td>
<td>2,617 1.000</td>
<td>.793 .619</td>
<td>.899 .641</td>
<td>.793 .619</td>
<td>.899 .641</td>
<td>9 9 8</td>
<td>10 10</td>
</tr>
</tbody>
</table>

Average Latin America: 551 .211

### Notes:

- Efficiency Index (col. 2) x Equity Index (cols. 3-6) = corresponding welfare measure (cols. 7-10).

- **E** = Geometric equity and welfare, respectively.
- **H** = Harmonic equity and welfare, respectively.
- **A** = Aigner's equity and welfare, respectively.
- **(1-Gini)** = 1-Gini Coefficient and the corresponding welfare measure.

- Efficiency Index (col. 2) x Equity Index (cols. 3-6) = corresponding welfare measure (cols. 7-10).

**Notes:**

- a. Based on Fishlow data.
- b. Based on Longon data.
- c. Based on Banco de Mexico data.
- d. Based on Urrutla data.
- e. USA = 1.000.
Table 1: Efficiency, Equity, and Social Welfare in Nine Latin American Economies

Methodology:

The measures of equity are calculated as follows: the original frequency distributions of recipients and incomes were cumulated from poorest to richest and the logarithm of the cumulated number of recipients plotted against the log of the cumulated income. Assuming a general linearity between the log of cumulated recipients and income, we estimated the income which corresponds to each standard ordinal percentile (10, ..., 90, 95) of recipients by linear interpolation between relevant observations. These interpolated income shares or their corresponding frequency distributions were used directly in the calculation of the equity measures. Since the equity measures are sensitive both to the number and distance between income intervals, the estimates presented in this study have been calculated from the interpolations derived in the above procedures, regardless of the original number of income intervals.

Sources and Methods:

A. Time Series of Country-Wide Size Distributions.

Lines 1-2 (Argentina): G.D.P. estimates are from S. N. Braithwaite (June 1968), Table 9, p. 147, line 1, for 1961. Estimate for 1953 was constructed with an average annual parity rate, obtained by dividing the annual estimates of total GDP in 1960 pesos given in Table 20, p. 168, by their corresponding 1960 dollar equivalents from Table 9, p. 146. The average parity rate was then applied to the GDP estimate in 1960 pesos for 1953 from Argentina, Consejo Nacional de Desarrollo (1965), Vol. 3, Table III-1, p. 2, line 13. Population estimate is from Volume V, Table V-2, p. 6. Measures of inequality are based on data in Consejo Nacional de Desarrollo (1965), Vol. 4, Table IV-1, p. 5, for 1953; IV-223, p. 253, for 1961. Interpolations were calculated from twenty-two original income intervals.

Lines 3-4 (Brazil): G.D.P. for 1960 is from S. N. Braithwaite (August 1967), Table 21, p. 41. The 1970 G.D.P. figure is derived by applying the growth rate of per capita income implicit in Fishlow (May 1972), pp. 392 and 399, to the 1960 Braithwaite (August 1967) base income. Measures of inequality are based on estimates of the economically active population (e.a.p.) divided into nine original income intervals given in Fishlow (May 1972), Table 1, p. 392, for 1960, and in Table 5, p. 399, for 1970. The estimate of the 1960 e.a.p. is from Brazil, Fundação I.B.G.E. (July 1971), Table VI, p. XXIX, and for 1970 from Table 8, p. 6.

Lines 5-6 (Brazil): G.D.P. estimates same as lines 3-4 above. Inequality measures are based on the twelve original intervals with mean incomes and the decile shares given in Langoni (October 1972), Table 4, p. 14, for both 1960 and 1970. Estimates for e.a.p. for 1960 are from Brazil, Fundação I.B.G.E., loc cit., and for 1970 from Langoni, (October 1972), Table 8, p. 19.
Lines 7-8 (Puerto Rico): G.D.P. is calculated from product estimates and adjusted price deflator given in Table 1 of Puerto Rico Planning Board, *Ingreso y Producto 1967*, pp. 8-9, lines 1, 16 and 30. Population from line 25.

All other columns are based on Puerto Rican Department of Labor, *Income and Expenditures of the Families*, (February 1967), Report 1A, Table 20, p. 110, for 1953 data. Interpolations are calculated from nine original income intervals. Data for 1963 are from Table 6, p. 6, and are interpolated from thirteen original income intervals.

Lines 9-10 (United States): G.N.P. average was calculated by deflating current dollar estimates given in United States Department of Commerce, *National Income and Product Accounts* (1969), "Statistical Tables," Table 1.1, p. 3, line 1, by index given in Table 8.1, p. 159, line 1, adjusted for base 1960 = 100. Annual population is given in Table 7.6, p. 156.

Measures of equity are based on J. Fitzwilliams (April 1964). We first average the percentage shares of the numbers of consumer units and incomes which appear in Table 4, p. 5, for the three year period, and then interpolated from the shares resulting from the nine average income groups.

B. Cross-Section of Country-Wide Distributions

Lines 1-3, 9-10: Same as above.

Line 4 (Chile): The estimate of G.D.P. per capita for 1967 was calculated by multiplying the parity estimate in U.S. dollars for 1960 given by Braithwaite (June 1967), Table 19, p. 167, line 4, by the index number of per capita product for 1967 at constant prices given by United Nations, *Yearbook of National Account Statistics 1972*, Vol. III, Table 7, p. 136, line 2, with base changed to 1960 = 100. Measures of inequality are calculated from the nine decile shares given in Isabel Heskia (Marzo 1973), Table 1, p. 6.

Line 5 (Colombia): G.D.P. estimate is from S. N. Braithwaite (August 1967), Table 21, p. 71. Measures of equity are based on the twenty-three income intervals of population and income given by M. Urrutia and Clara de Sandoval (July 1970), Table A-6, p. 1003.


Line 7 (Mexico): G.D.P. estimate is from S. N. Braithwaite (June 1968), Table 9, p. 147, line 17, for 1963. Measures of equity are based on data from Banco de México, *Encuesta sobre Ingresos* (1966), Series 38, p. 432. Interpolations are calculated from sixteen original income intervals.

Line 8 (Peru): G.D.P. estimate from S. N. Braithwaite, (August 1967), Table 21, p. 41. Measures of inequality are based on the fourteen income intervals in R. Webb (September 1972), Table 3, p. 7, with income given in millions of Peruvian soles. Estimates of total labor force and income in millions of U.S. dollars appears in R. Webb (June 1973), Table 2, p. 6.
offsets the declining equity.\textsuperscript{19}

In the cross-section sample of nine countries (eight from Latin America plus the United States) which appear in Table 1B, the rankings according to the different equity measures (cols. 12-15) are generally similar to one another. The geometric and harmonic equities differ slightly from each other and from the Aigner and Gini indices. Although constructed in a totally different manner, the latter two measures yield almost identical rankings, except in the cases of Brazil (Fishlow data) and Mexico. Likewise, the different welfare indices for the sample of countries concur with one another except in the case of the Gini welfare measure applied to Argentina and Costa Rica (col. 19).

For the cross-section of countries, there appears to be a casual (untested) relationship between equity and efficiency. The three richest countries (USA, Puerto Rico, Argentina) whose income ranges from $3,617 to $857 per head do demonstrate higher absolute levels of equity than the other countries. Their geometric equity ranges from .720 to .793 compared to a range of .477 to .601 for Brazil, Peru, and Colombia, the three poorest countries with income levels of $336-364 per head (Table 1B, cols. 1 and 3).

The observation that richer countries may structurally demonstrate greater equality than do the poorer countries is contradicted by the sparse time series which suggest growing inequality within countries over time. (Compare Figures 1A and 1B.) But even the impressionistic correlation of equity and efficiency between countries should in no way be construed as indicating a likely future path for a poor, unequal country. For example, it is inconceivable that the growth path of Brazil as exhibited from 1960 to 1970, is related to or even directed toward the "higher" iso-welfare contour which Argentina had achieved by 1961.\textsuperscript{20}
**Figure 1A: Time Series of Country-Wide Welfare**

![Graph showing time series of country-wide welfare for different countries over time.](image)

**Figure 1B: Cross-Section of Country-Wide Welfare**

![Graph showing cross-section of country-wide welfare for different countries.](image)
The location of countries on the welfare "mountain" in any given decade should not be interpreted as indicating a pathway up that same mountain for other countries in later decades. Such a "pathway" (the typical regression line in cross-section studies) implies the replication of social conflict (the process of income distribution) from one country to another. The statistical procedures implied in such analysis, however, assume both independence of one country's experience from another's as well as the constant and unrelated variation of that experience (homoscedascity). Yet, neither the growth nor equity of the Latin American economies, indeed, of all the so-called Third World, can be seen as truly independent of the U.S. or of other industrial economies, or, for that matter, of each other.

To the extent that these social welfare measures suggest a modification of the so-called benefits believed to accompany the gains of growth by accounting for the loss of equity, the measures may be only marginally superior to the traditional use of average income as a simplifying indicator. The bias demonstrated above in which the gains of income growth systematically outweigh the social loss associated with deteriorating equity is a bias perhaps inherent in the formulation of the neo-classical criteria.
B. Social Welfare in Rural and Urban Zones

The general impression throughout Latin America is that the city, rather than the countryside, is a much better place in which to live. Indeed, the mean income alone indicates a standard of living in the city which ranges nearly twice to three times the average in the countryside (Table 2, column 1), uncorrected for price differences. Nevertheless, the cities are the scenes of the most inhospitable slums and desperate circumstances of human and subhuman existence as both poor and rich of the surrounding hinterland are drawn into the horror and ecstasy of the modern Latin American city.

The ratios of urban to rural equity (Table 2, columns 2-5) almost universally concur that the rural zones are the more equal. Of the 32 ratios presented here (four measures for each of eight observations), only 5 indicate greater equity in the urban areas. The disparity in mean incomes dominates the indices of actual social welfare (columns 6-9). As a result, the ratio of urban to rural welfare varies from 1.06 for $W_h$ in Colombia to 2.80 for $W_h$ in Peru, uncorrected for price differences between regions. The overall averages for Latin America (line 9) for each measure suggest that the urban zones enjoy nearly twice the welfare of the rural.

The shares of income which accrue to the urban population (Table 2, columns 10-11) summarize the overwhelming dominance of the urban zone in national life. In Peru (line 6), for example, 43% of the population resides in the cities and receive two-thirds of the national income. In the case of Mexico, the 56% of the population which lives in the cities receives nearly three-fourths of the national income.

That "efficiency" is measured only in money terms and that the welfare index is dominated by efficiency may bias the urban welfare rating. However, by other standards, such as health, infant mortality, housing, roads, access to year-round food and to other services, the superiority of urban welfare
### Table 2

Welfare Comparisons in the Urban and Rural Zones
(expressed as ratios of urban to rural indices)

<table>
<thead>
<tr>
<th>Efficiency</th>
<th>Mean Income</th>
<th>Equity</th>
<th>Social Welfare</th>
<th>Urban Shares</th>
</tr>
</thead>
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<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>1. Chile</td>
<td>1.944</td>
<td>.970</td>
<td>.894</td>
<td>.993</td>
</tr>
<tr>
<td>2. Colombia(^a)</td>
<td>1.714</td>
<td>.914</td>
<td>.618</td>
<td>1.024</td>
</tr>
<tr>
<td>3. Colombia(^b)</td>
<td>2.313</td>
<td>.837</td>
<td>.711</td>
<td>.927</td>
</tr>
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<td>4. Costa Rica</td>
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<td>.937</td>
<td>.903</td>
<td>.968</td>
</tr>
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<td>5. Mexico</td>
<td>2.311</td>
<td>.901</td>
<td>.787</td>
<td>.960</td>
</tr>
<tr>
<td>6. Peru</td>
<td>2.673</td>
<td>.990</td>
<td>1.047</td>
<td>.989</td>
</tr>
<tr>
<td>7. Puerto Rico</td>
<td>1.809</td>
<td>.841</td>
<td>.728</td>
<td>.918</td>
</tr>
<tr>
<td>8. Puerto Rico</td>
<td>1.899</td>
<td>.995</td>
<td>1.019</td>
<td>1.005</td>
</tr>
<tr>
<td>Averages (lines 1–8)</td>
<td>2.101</td>
<td>.923</td>
<td>.838</td>
<td>.973</td>
</tr>
</tbody>
</table>

Notes:  
\(^a\) Based on Urrutia data.  
\(^b\) Based on DANE data.
Sources and Methods:

Line 1 (Chile): Based on the decile shares for urban and rural zones from Heskia (1973), Table 1, p. 6. The number of recipients in each zone appears in Table 4, p. 8 and mean incomes by zone in Table 11, p. 27.

Line 2 (Colombia-Urrutia): Based on data for the urban and rural zones from Urrutia and Sandoval (July 1970), Table A-3, p. 1001, with 31 intervals for the urban zone and Table A-5, p. 1002, with 50 intervals for agriculture-and-rural-non-A.

Line 3 (Colombia DANE): Calculated from the fifteen original intervals for urban and rural zones from Colombia Departamento Administrativo Nacional de Estadística (1972), Table 21-22, pp. 71-72.

Line 4 (Costa Rica): The mean income for each interval of the country-wide distribution was first calculated from Costa Rica (1972), Appendix Table 4, p. 81, which gives the shares of persons, families and their income totals for eleven original intervals. These income means were then applied to the frequency distributions of urban and rural families given in Table 8, p. 40, to obtain the actual income for each share of recipients by zone. The difference between the total income (p. 81) and the income thus aggregated was distributed evenly across all the income classes. The eleven intervals for the urban-rural zones (Table 8, p. 40) were reconciled by successive linear interpolation with the twelve different intervals for the country-wide distributions given on p. 81.

Line 5 (Mexico): Frequency distributions for urban Mexico were calculated as a residual by subtracting the fourteen original intervals for localities under 2,500 inhabitants given in Banco de México (1966), Series 38, p. 429, from the country-wide distributions, p. 432.

Line 6 (Peru): Calculated from R. Webb (June 1973), Table 3, p. 7, from the six intervals given for the rural zone and seven for the urban distribution.

Lines 7-8 (Puerto Rico): Calculated from shares of numbers of families and shares of income from Puerto Rico Planning Board (1967), Table 6, p. 6, for nine intervals for 1963, and from Table 20, p. 110, for the thirteen original intervals in 1953. Urban families are defined as residing in places of 2,500 inhabitants and over and for 1963 the fringes of the large urban areas are also included.
may not be as decisive. The difference in money income alone does reflect the state of development policy in these countries: that, in fact, growth in these countries has been urban based and directed, disproportionately benefitting the urban elites.

C. Social Welfare in the Agricultural and Nonagricultural Sectors

While the division of the economy into urban and rural zones provides us with some dimension of geographic welfare, an alternative division of the economy into different producing sectors may provide us with a view of the contribution of the underlying components to the overall behavior. Indeed, the changes in equity and efficiency in the farm sector points to extraordinary pressure on those who produce food and industrial crops. A traditional path to capitalist development implies a squeezing of the agricultural sector, the transfer of value to other sectors, and a reduction in the basic cost of reproducing the labor force throughout the economy.

Measures of efficiency and equity in the non-agricultural and agricultural sectors are available for nine different countries and three of these have data for more than one year (Table 3). The ratios of the average incomes between the sectors affirm that the disparity between these two sectors ranges from 1.13 in the case of Argentina for 1953 (line 1) to 3.51 for Brazil in 1970 (Fishlow data, line 5). The widening disparity between income means of the two major sectors is also observed in Argentina, Brazil, Puerto Rico and the U.S.A. (lines 1-2, 3-4, 10-11, and 12-13).

According to the ratios of the four equity measures (cols. 2-5), only the cases of Argentina and the United States reveal that incomes are more equally distributed in the non-A than in the A sector (as indicated by a ratio of greater than unity, lines 1-2, 12-13.) In both Argentina and Brazil, the decline in
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
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<td>(1) (2) (3) (4) (5) (6) (7) (8) (9)</td>
<td>(10) (11)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Argentina 1953</td>
<td>1.125</td>
<td>1.176</td>
<td>1.268</td>
<td>1.087</td>
</tr>
<tr>
<td>2. Argentina 1961</td>
<td>1.311</td>
<td>1.106</td>
<td>1.152</td>
<td>1.053</td>
</tr>
<tr>
<td>3. Brazil a 1960</td>
<td>1.842</td>
<td>.884</td>
<td>.709</td>
<td>.958</td>
</tr>
<tr>
<td>4. Brazil a 1970</td>
<td>2.733</td>
<td>.801</td>
<td>.661</td>
<td>.907</td>
</tr>
<tr>
<td>5. Brazil b 1970</td>
<td>3.514</td>
<td>.525</td>
<td>.533</td>
<td>.768</td>
</tr>
<tr>
<td>7. Colombia 1970</td>
<td>2.101</td>
<td>.868</td>
<td>.738</td>
<td>.926</td>
</tr>
<tr>
<td>8. Guatemala c 1971/66</td>
<td>n.c.</td>
<td>.861</td>
<td>.768</td>
<td>.931</td>
</tr>
<tr>
<td>9. Mexico 1963</td>
<td>1.981</td>
<td>1.002</td>
<td>.934</td>
<td>1.010</td>
</tr>
<tr>
<td>Average Latin America (lines 1-4, 6-11)</td>
<td>1.974</td>
<td>.905</td>
<td>.827</td>
<td>.959</td>
</tr>
</tbody>
</table>

Notes: n.c. = data for A and non-A are "not comparable."

- a. Based on Langoni data.
- b. Based on Fishlow data.
- d. Based on "farm-nonfarm" data for 3 years averaged.
Table 3: Intra-Country Comparisons of Welfare in the Agricultural and Nonagricultural Sectors

Sources:

Lines 1-2 (Argentina, 1953-1961): Calculated from distributions in Argentina (1965), Volume IV. Each sector was formed by adding the number of families and their incomes for each of the 22 income intervals of the following tables: Agriculture for 1953: Tables on pp. 7 and 15; Nonagriculture for 1953: Tables on pp. 8-13, 16-22; Agriculture for 1961: Tables on pp. 225 and 263; Nonagriculture for 1961: Tables on pp. 256-261, 264-270. Shares in numbers of families and incomes were then calculated for each of the aggregated sectors and the shares interpolated to obtain shares for standard ordinal groups of families, from which equity measures were calculated.

Lines 3-4 (Brazil): Decile shares of recipients and their corresponding income for 1960 for both sectors are from Langoni (1972), Table 6, p. 17, and for 1970 from the table on p. 14. Economically active population (e.a.p.) in agriculture is from Fundação I.B.G.E. (July 1971), Table VI, p. XXIX, for 1960, and from Table 8, p. 19, for 1970. The product of the total number of recipients by the sectoral means yields the sectoral income totals from which were calculated the absolute frequency distributions of income and numbers. The equity measures were estimated from the full eleven "reconstructed" or interpolated interval distributions which do not appear in Langoni (1972).

Line 5 (Brazil): Population and income shares for nine original intervals in both sectors for 1970 are given by Fishlow (May 1972), Table 5, p. 399.

Line 6 (Chile): Shares of recipients and their corresponding incomes for seven original intervals for the agricultural sector are given by Heskia (March 1973), Table 9, p. 21. The nonagricultural distribution was estimated by averaging separate distributions for the industrial and service sectors for each of eight original intervals weighted by the total number of sectoral recipients. The overall number of recipients in each interval appears in Table 2, p. 8, and mean income in Table 11, p. 27.

Line 7 (Colombia): The nonagricultural distribution was calculated by subtracting the number of people in each income interval of the agricultural distribution from the country-wide distributions and then applying the standard interval means to the number of recipients to estimate income shares. The original fifteen intervals for agriculture are given by Colombia DANE (1972), Table 8, p. 135; the country-wide distributions in Table 20, p. 70; total e.a.p. from Table 4, p. 129; and total income from Table 5, p. 130.

Line 8 (Guatemala): The agricultural distribution is not comparable to the "cities only" distribution. The two concepts are not exhaustive of the total population, and the two studies refer to different years. The numbers of agricultural families for twenty-two original intervals and their means appear in R. A. Orellana (1966), Table 31, p. 143. The numbers of families and the total income for each of ten original intervals is given by R. A. Orellana and A. de Leon (1972), Table 4.0-1, p. 93, for five major cities.

Line 9 (Mexico): Based on distributions of Bancc de México (1966). Rural shares in numbers and income from Table 38, p. 429. Urban shares in numbers and income from table on p. 430-431. Interpolations are calculated from shares to families in 16 income intervals.
Line 10 (Puerto Rico 1953): Based on distributions given in Puerto Rico Department of Labor (1953), Report A-1, Table 6, p. 15. Agriculture includes forestry and fisheries; nonagriculture is the aggregation of the sectoral distributions of construction, manufacturing, utilities, trade, finance, services, public administration and "others." Shares of number of families in each sector are given in Table 6. Average incomes were calculated by dividing the income received by each income interval by the number of families in that interval for the country-wide distributions constructed from Report 1-A, Tables 1 and 3. Income shares were obtained by multiplying the number of families in each interval for each industry by the average income for that interval. Finally, the income shares for the nine intervals were interpolated.

Line 11 (Puerto Rico 1963): Based on Puerto Rico Department of Labor (1963), Report 1-A. Sectors are composed of the same industries as in the 1953 data. Shares of the number of families in each income interval for each sector are given in Table 15-A1, p. 78. Average incomes were calculated first for each of the 13 intervals for the urban and rural zones from the information in column 1 of Table 15-D1 and 15-E1. Then, these average incomes for each interval were applied to the number of families within each sector residing in the rural or urban zone to yield the actual income of rural and urban families for each interval within each industry. The rural and urban distributions were then aggregated and income shares formed for each income interval for each industry. These income shares were then interpolated to obtain the shares for standard ordinal groups. The interpolated shares were used to calculate all measures of equity.

Lines 12-13 (United States): Based on Fitzwilliams (1964), Tables 7 and 8, p. 7. We averaged the percentage shares in numbers of families and incomes for each three year period and then interpolated the twelve original income intervals. This is the same procedure followed by Kuznets (1963) for the earlier periods. Data for 1960-1962 include Hawaii and Alaska.
this ratio over time for all the equity measures indicates a rapid deterioration of equality in the non-A sector. Only in the case of Puerto Rico does a rising ratio (lines 10-11) suggest a narrowing in the differences of equity between the two producing sectors. (See Figure 2 for a sketch of the Puerto Rican case.)

The ratios of actual social welfare (Table 3, cols. 6-9) are all greater than unity and range from 1.19 in the case of harmonic welfare for Puerto Rico in 1953 to 3.79 in the case of Gini welfare for Brazil in 1970 (Fishlow data).

The increase in the ratios of actual social welfare over time for Argentina, Brazil, and the U.S.A. may be traced to the rising differences between the productivities of the two sectors despite the declining equity ratios. Only in the case of Puerto Rico did both the ratios of efficiency and equity rise.

The rising ratios suggest the severe internal differences between major producing sectors and the division of each country into two very different societies. If we slice these economies into either geographical (urban/rural) or sectoral (non-A/A) divisions, then the widening gap in welfare between each pair of these "internal" societies may be seen primarily due to the widening disparity in productivity and to minor differences in equity. But our interest should not rest with observations as to the relative welfare levels and their trends.

Rather, we should inquiry further into the differences within each country: why, despite the increase in overall social welfare, have not these societies been able to guarantee acceptable levels of social welfare to families in all producing sectors and zones?

D. Intra-Country Comparisons: Four Major Sectors

For Puerto Rico and Argentina, family income can be further disaggregated into the distributions generated by each of four major producing sectors for each of two years and for Mexico in a single year. The measure of sectoral
Figure 2: Actual Social Welfare for Two Major Sectors in Puerto Rico, 1953 and 1963 as Measured by the Harmonic Mean Function ($N_H$)

Harmonic Equity - $E_H$

Efficiency Measure in thousands of 1958 dollars

A - Agriculture  N - Non-Agriculture

Iso-Welfare Index:
- A 1953
- A 1963
- N 1953
- N 1963

(1.650)  (1.210)  (1.138)  (0.948)
efficiency (Table 4, cols. 1-2; indexed in cols. 7-8) indicates that the average family income generated by the commerce sector (III) enjoys a substantial premium over incomes generated in agriculture (I) which is ranked lowest for all three countries. In the cases of both Puerto Rico and Argentina, this premium between commerce and agriculture increases in the later of the two years.

In terms of harmonic equity \( E_H \) (cols. 3-4) the industrial sector (II) ranks either third or fourth most equal in all three countries (cols. 9-10) despite the different industrial composition and social histories of the countries. Commerce (III) ranks as the first or second least equal in all three countries, a finding consistent with the heterogeneous nature of that sector's activities which range from petty commerce to high finance.

Agriculture (I) demonstrates the least consistent equity ranking for the three countries. In Puerto Rico and Mexico, agriculture ranks close to industry as the most equal of the sectors; in Argentina, however, agriculture ranks first as the least equal of sectors.

In comparing sectoral welfare between years and the ranking between countries, the contribution of the efficiency factor dominates the equity factor (cols. 5-6, 11-12). In both Puerto Rico and Argentina, for example, commerce (III) and services (IV) reflect the highest level of social welfare, while industry and agriculture the lowest. The debased ranking of agriculture in all countries for all years underscores rural poverty and the backwardness of policies affecting this sector.

The comparisons of social welfare highlight the increasing disharmony and stress within these economies. In Puerto Rico, for example, the difference in actual social welfare between commerce and agriculture increased from .61 in
TABLE 4
Efficiency, Equity, and Social Welfare for Four Major Sectors in Puerto Rico, Argentina, and Mexico, as Measured by the Harmonic Mean Function ($E_H$)

<table>
<thead>
<tr>
<th></th>
<th>Efficiency Mean Income</th>
<th>Harmonic Equity - $E_H$</th>
<th>Social Welfare - $W_H$</th>
<th>Efficiency Index ($A = 100$)</th>
<th>Equity Rank (by sector)</th>
<th>Welfare Rank (by sector)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
</tr>
<tr>
<td>A. Puerto Rico</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I. Agriculture</td>
<td>1.331</td>
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<td>.712</td>
<td>.620</td>
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<td>.544</td>
<td>.527</td>
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<td>IV. Services</td>
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<td>.549</td>
<td>.523</td>
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<td>V. All Sectors</td>
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<td>.505</td>
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<td>.498</td>
<td>156</td>
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</table>

Notes: a. Calculated as the sectoral income divided by the number of families with head attached to the corresponding sector.
c. In thousands of 1960 Argentina pesos.
d. In thousands of 1963 Mexican pesos.
Table 4: Welfare for Four Major Sectors

Methodology:

I. Agriculture: Puerto Rico includes forestry and fishing. Argentina includes forestry, hunting, fishing, and livestock. Mexico includes forestry, hunting, fishing, and livestock.

II. Industry: Puerto Rico includes construction, manufacturing. Argentina includes mining and quarrying; industry; construction. Mexico includes mining and quarrying; manufacturing, construction; electricity, water and sanitary services.

III. Commerce: Puerto Rico includes wholesale and retail trade; finance; insurance and real estate. Argentina includes commerce and financial institutions. Mexico includes "commerce" alone.

IV. Services: Puerto Rico includes transportation, communication and other public utilities; service industries; public administration. Argentina includes transport; storage and communications; general government and other services; domestic services; services; professionals and independent earners; retired and pensioners; rentiers. Mexico includes transport, storage and communication; services.

Sources:


Argentina: From Argentina (1965), Volume IV. Each sector was formed by adding the number of families and their incomes for each of the 22 income intervals of the following tables:

Agriculture for 1953: tables on pp. 7 and 15; for 1961, tables on pp. 225 and 263.


Commerce for 1953: tables on pp. 10 and 17, for 1961, tables on pp. 258 and 265.


Mexico: From Banco de Mexico (1966). Number of families in all sectors appear in table on p. 420; income for all sectors, by income interval appears on table on p. 428.
in Argentina, the difference in social welfare between commerce and agriculture increased from .45 to .70 from 1953 to 1961. The relative and absolute movement of sectoral equity, efficiency, and welfare are sketched in Figure 3 for Puerto Rico.

E. Comparisons Between Cities

In Latin America, economic growth has been closely associated with the influence of the major cities in the commercial, industrial, and political life of their societies. The great centralization of power and wealth in these major cities, however, has not been accomplished without severe conflict; Latin America's cities have frequently been the scene of great social upheavals.

The efficiency, equity and social welfare of Latin American cities summarized in Table 5, are comparable, as their incomes are converted into a common currency equivalents. Incomes (col. 1) range from $350-450 per head for the poorest cities (Recife, Cali, and Barranquilla) to nearly $1000 per head for the wealthiest cities (São Paulo, Caracas, and San Juan). The least equal cities, as indicated by the four equity measures (cols. 2-5) and their rankings (cols. 11-14) include Asunción (Paraguay), the two Mexican cities and Medellín (Colombia); the most equal include Guatemala, Caracas, and São Paulo.

The comparison of several cities within a given country provides further evidence of the great disparities between the cities themselves. For example, the two Brazilian cities, Recife and São Paulo, rank relatively high in terms of equity (lines 1-2, cols. 11-14), although Recife is the poorest of all the cities in our sample and São Paulo among the richest (col. 10). Similarly, the two Venezuelan cities demonstrate significant disparity between their income levels: the per capita income for Maracaibo is $587 compared to
FIGURE 3: ACTUAL SOCIAL WELFARE FOR FOUR MAJOR SECTORS IN PUERTO RICO, 1953 AND 1963, AS MEASURED BY THE HARMONIC MEAN FUNCTION ($W_H$)

Agriculture 1 = Industry  C = Commerce  S = Services for 1953 underlined letters refer to 1963.
### TABLE 5

**Efficiency, Equity and Social Welfare in Fourteen Latin American Cities**

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**Note:** a. Income per capita in 1960 U.S. dollar equivalents.
Table 5: Efficiency, Equity, and Social Welfare in Fourteen Latin American Cities

Methodology:

Column 1: Money income in each study for each year was deflated to 1960 prices using local price indices. When a city index was unavailable, the country-wide index or the index for a nearby city was applied. Latin American purchasing parity rates from Braithwaite (1967) were used to convert the deflated national currency to 1960 U.S. dollars. Average family size from each city study was then applied to family income to obtain per capita income with the exception of the four Colombian and two Venezuelan cities. For these (Lines 3-6, 13-14), a general country-wide "urban family size" from the ECIEL Surveys had to be applied to each of the constituent cities.

Columns 2-9: Equity measures are calculated from the grouped data for each city in current prices of local currency. Welfare is the product of the equity index and efficiency in 1960 U.S. purchasing power equivalents.

Sources:

Line 1 (Recife): Cost of living deflation is from Fundação Getulio Vargas (June 1972), "All Brazil," p. 128, for Recife. Four different distributions from various studies are reported in Cavalcanti (June 1972). We interpolated each distribution independently to obtain the inequality measures and standard ordinal shares and then averaged the four observations. The 1960 study is based on six intervals, 1961 on nine, 1967 on seven, and 1968 on eleven original intervals. The total number of families of each study appears in Table 1, p. 86; average family income in Table 2, p. 88; and the frequency distributions in Table 4, p. 99.

Line 2 (São Paulo): Cost of living deflator for São Paulo is given by Fundação Getulio Vargas (June 1972), p. 132. Frequency distributions with thirteen original income intervals appear in J. F. de Camargo (May 1972), tables on p. 6. Another report on this study by J. Tiacci Kirsten (1972) gives only four income consuming classes and therefore could not be used.

Lines 3-6 (Four Colombian Cities): Cost of living indices are reported in Colombia DANE (1961), Table 398, pp. 693-4, for 1960 and 1961. Cost of living for "workers" for 1964-67 from Vol. 4, Table 4, "Indices y Precios, Trabajo, Producción," pp. 13-16, for Barranquilla, Bogotá, and Cali. Cost of living for Medellín from Colombia, Banco de la República, (December 1970), Table G-6, p. 78.

The number of families and their incomes for decile intervals for the four Colombian cities were provided by ECIEL (1972). The missing shares were reconstructed by interpolation, and the complete information was used to estimate the measures of inequality.

Line 7 (Guatemala City): Cost of living index is from Guatemala, Dirección General de Estadística (1968), Table I-1. The numbers of families and total income for each of the ten original intervals is given by R. A. Orellano and A. de León (1972) in Table 4.0-2 for Guatemala City.
Lines 8-9 (México, D.F., Monterrey): Cost of living index is from México, Secretaría de Industria y Comercio (November/December 1966), Table 8.8, p. 1236, for 1964-65. The distribution for México, D.F., is calculated from the nine original intervals given in México, Banco de México (1966), Series 19.1, p. 244. The distribution for Monterrey is calculated from the accumulated shares of families and income before taxes given in twenty-two original income intervals by J. Puente Leyva (1969), Appendix Table 1, p. 82. The total number of families is given in the text on p. 95 and the mean family income per month in Appendix Table 2, p. 85.

Line 10 (Asunción): The General Consumer Index for "Workers in Asunción," is found in Paraguay, Dirección General de Estadística y Censo (January 1973), p. 52, with a base of year 1964. This series was then back-linked with the 1960-63 series from Paraguay, Ministerio de Agricultura y Ganadería (1962-1969). The frequency distributions were provided by ECIEL (1972).


Lines 12a-b (San Juan): Cost of living index for wage-earning families is from Puerto Rico Planning Board (1968), Table 85, p. 109. Data from 1953 had to be inflated forward to 1960 using Puerto Rico Planning Board (1959), Table 18, p. 38, for the 1953 base and (1962), Table 18, p. 20, for the 1960 base. The San Juan distributions are based on Puerto Rico Department of Labor (1963), Report 1-A, Table 20, p. 110, for the nine original intervals for 1953, and Table 6, p. 6, for the thirteen original intervals for 1963.

Lines 13-14 (Venezuela): The cost of living index for Caracas appears in Venezuela, Dirección General de Estadística (1970), p. 194, and for a general Venezuelan index, p. 213, used to deflate the Maracaibo estimate. The frequency distributions for each city were provided by Programa ECIEL (1972).
§914 in Caracas, but their equity rankings are similar. Nevertheless, extreme differences in levels of social welfare (see Figure 4) separate the two Venezuelan cities.

The average income for the four Colombian cities, uncorrected for differences in regional price levels, rank Cali as the poorest, followed by Barranquilla, Medellin, and Bogotá, the richest. In terms of equity, however, Medellín ranks the least equal, followed by Cali, Bogotá, and Barranquilla. Nevertheless, the four cities are located in the same region on the social welfare map (Figure 4), as are the two Mexican cities, México D. F. and Monterrey.

In summary, the Latin American city, itself the scene of great inequality around a high overall income, is a microcosm of the wider development it directs. The comparison of cities merely gives us glimpses of the range of situations throughout Latin America. Earlier, we had seen evidence of the greater equity associated with the rural as opposed to the urban zones, while here we contrast the great cities and their consequences on welfare. Both the product and cause of this style of capitalist development, the city remains the conflicted island-volcano which flaunts its wealth above the vast seas of rural poverty.
Figure 4: Efficiency, Equity and Social Welfare in Fourteen Latin American Cities

Efficiency Measure (Per Capita Income in 1960 U.S. Dollar Equivalents)
VI. Conclusions

A. The Technique and Findings

This paper is an attempt to apply two schemes of measuring neoclassical social welfare for countries, urban and rural zones, major sectors, and cities of Latin America. Both schemes satisfy the conventional criteria which determine the nature and shape of the individual's utility and the society's welfare functions. Drawing on the family of mean value functions whose properties are detailed in Mera (1967) and on another form described in Aigner and Heins (1967), we estimate measures of equity for more than ninety different distributions and compare them to a form of the conventional Gini measure. The product of each of these four equity measures and the efficiency index (level of per capita income) is taken as a measure of actual social welfare.

We have found that these welfare schemes appear relatively insensitive to the deterioration in equity which we have consistently observed during the growth process and that the changes in efficiency dominate the measures of social welfare. For example, each of the four equity indices indicates a widening of the income distributions for four countries over ten year periods (Table 1A). Nevertheless, the increases in efficiency proved sufficient to offset these losses, at least in terms of the social welfare criteria applied here.

We also indicated a fundamental contradiction plotting equity measures against real income (Figures 1A and 1B): while each of the four measures indicates a declining equity in the case of each country for which time-series is available, the cross-section of nine Latin American countries suggests a casual (untested) and positive relationship between equality and the level of income per head! Despite the fashion among some economists who extend the
promises of "improved" equity over long periods of time despite short-run trends to the contrary, my own inclination is to treat the international comparisons much more cautiously.

To trace the course of social welfare for one country during a period of time may be a meaningful exercise if one wishes to judge the gains and losses of that process. But is there any point to extending welfare comparisons between countries (Table 1B) or between cities of different countries (Table 5)? Is there any meaning in calibrating, for example, that the actual social welfare of Brazil is one-quarter that of Argentina which is one-third that of the United States? Indeed, if one desired to make this type of comparison, even more heroic assumptions are required regarding the homogeneity of the individual utility parameters across countries and of the comparability of their incomes. Even if one desired to proceed with these assumptions, a structural model must then also be specified which links the equity-generating mechanism with the income-generating process. In this case, such a linking would have to explain a positive relationship between these two processes on a long-term, international basis and a negative relationship in the case of the short-run, time-series findings. The short-run model would have to deal with the nature of the struggle between social classes over their respective slices of the pie, while the cross-section explanations would have to reflect such structural factors as the nature of the exploitation of natural resources, commodity exports, and the impact of their colonial history, as well as the consequences of such internal struggles as those which concern organized labor, land reform, the armed forces, and regional growth.

From the sample of urban and rural areas (Table 2) we have noted that almost all the urban zones demonstrate less equality than the rural. Again, the higher income levels dominate the welfare function and result in a higher
urban score despite the lesser equality. The great absolute distance in efficiency and welfare between the urban and rural reflects the internal cleavage being built into these societies.

Splitting these societies another way, we also noted the great and increasing disparity between the income levels of the nonagricultural and agricultural (non-A/A) sectors in a number of countries. In all the countries with the exception of Argentina, Mexico, and the U.S.A., the A-sector demonstrates greater equality than the non-A sector (Table 3). In the four countries for which time series are available, the distance between the non-A/A means widened and with the exception of Puerto Rico, the non-A/A equity ratio diminished. The fall in this latter ratio was the result of the deterioration in equity on the parts of both the non-A and A sectors, with a greater decline in equity of the non-A sector for Argentina, Brazil, and the U.S.A. In Puerto Rico, the apparent rise in the ratio of equity indices was the result of the relatively greater deterioration in the A-sector than in the non-A sector.

Since the product of the A-sector (food and industrial crops) is a primary determinant in the basic maintenance and reproduction cost of the entire people and a source of raw materials for the other sectors, increasing disparities between the equity and efficiency levels of these sectors suggests extreme hardship for those working and producing in the A-sector. Indeed, these observations reflect the growth path pursued by these countries, namely, squeezing the A-sector and widening the relative welfare benefits between the two sectors.

In the case of the four sector divisions (Table 4) available for three of the countries, we found agriculture to be the poorest but most equal sector in Puerto Rico and Mexico, but in Argentina, agriculture was shown to be the poorest and most unequal sector. The industrial sector was found to be
relatively poor but equal in all cases, and the commercial and service sectors relatively rich and unequal. Again, these sectoral differences are but further evidence of those changes which underlie the simple changes in the country-wide distributions.

The findings from the sample of fourteen Latin American cities, which in one sense may be taken as a subdivision of the urban zones, suggest that yet further and profound differences exist within the relatively wealthy areas of the poor countries (see Table 5). Great disparities in income levels are particularly evident among the cities of Venezuela and Brazil. The two Mexican and four Colombian cities are more similar in terms of both equity and efficiency. The time series for San Juan, Puerto Rico, indicates a rise in both equity and efficiency from 1953 to 1963, and hence a massive deterioration in equality for the rest of the country, since the country-wide distribution as a whole grew less equal. The Latin American city, compared to its hinterland, may be both the prime-mover and beneficiary of this style of economic development.

The application of the schemes of social welfare presented here could lend itself to the following type of conclusions: "Yes, we have suffered a deterioration in equality," concedes the development economist, the high priest who reads the signs of the social welfare function.27 "As you have suggested, any conclusion about equity may be sensitive to the measure selected. We have therefore applied different measures here consistent with your welfare criteria.

"But see how we've grown! By the very social welfare criteria you propose, which is acceptable to us to measure these forces, net social welfare has increased. By the very standards you impose on us, we have pursued that path which has yielded increases in social welfare and that has rewarded growth—even at the cost of minor losses of equity which we can correct sometime in the near future."
I believe such an interpretation to reflect an unfortunate use of the neoclassical welfare function which is, nevertheless, widespread in thinking and practice. A "technical," apolitical group of evaluators select themselves within a "formally democratic framework" to be the "'bearer' of the social welfare function." How ironic it is that this view of social welfare which embodies the extreme egalitarian ideal should become fashionable in capitalist societies characterized by extreme inequality! This egalitarian ideal may, in fact, be used to cloud the fact of extreme and increasing inequality in the case of the countries examined here. Is social welfare the state-borne legitimizer of the path taken?

We are urged not to be so harsh. After all, some of the equity measures, we are reminded, are extremely sensitive to the plight of the poor. Besides, the situation could even be worse in the absence of public subsidies and benefits, such as welfare, national defense, police protection, public highways, etc. "It is the modern-day analogue of Aquinas," writes one economist in his analysis of the tax implications for achieving Rawlsian social justice. "Everything for the greater utility of the poor." Equality becomes an "aesthetic taste," in the words of another public finance expert, "similar in nature to a taste for paintings." Thus, a benefit-cost rationality becomes applied to equality, and the social welfare function serves as the guide.

Seen another way, the productive system generates inequality. The state is called upon to take steps to "redistribute" income or consumption in order to prevent excessive damage by the unemployed, the hungry, or the "criminal" elements. To bourgeois society, social welfare and equity are viewed in their reduced form: the degree of desperation of the poor and the ostentatious "preferences" of the rich, be they preferences for goods, services, liberties, or for equality itself.
But how was the inequality (poverty, wealth, crime) created in the first place? A peasant earns $1 per day and then receives a "redistribution" which raises his income to $1.02. But how was the $1 determined in the first place? What is the nature of the policy and power which systematically denies an even larger share to the peasantry and also creates the urban beggar and rural migrant?

This paper has touched on none of these important questions. Our results yield more statistical silhouettes of the process, of increasing income levels and deepening inequality. In one sense, these countries may have avoided the whole equity question by relying on growth to ease social tension. Yet the very path of capitalist growth creates the inequities and enhances internal disparities.

The same question may be approached from a slightly different angle: can a country set aside the obsession with growth and improve social welfare by altering the distribution of income? Thus, Argentina (Table 1A, line 1) grew 18% in real per capita terms from 1953 to 1961 while geometric equity declined 3%. Could not the society's welfare have improved as much by improving equity 15% with no growth? In this context, our attention is called to one Latin American nation which has left the capitalist path and has embarked on economic policies to correct for decades, if not centuries, of growth and inequity. A careful examination of the changes in its distribution may reveal that despite some stagnation in the aggregate income level which has been the consequences of embargo and the reorientation of her trade, this island-people has achieved substantial improvement in social welfare, even by neoclassical criteria.

This type of thinking—trade-offs, alternative paths, in short, using the welfare function to evaluate possible programs—all this still takes place within the fantasy-world of imaginary choice. In reality, there is little to choose from. The "development" drive which compels a country towards aggregate
growth at the expense of equity is hardly a movement to be slowed by other than a perfunctory consideration of social welfare.

B. Technical and Philosophical Problems of Social Welfare

We turn now to two further categories of qualifications relevant to the welfare schemes applied here. The first deals with the technical aspects of the functions; the second deals with some broader philosophical criticisms of the very concepts we have sought to measure. In the first category, we have already noted the absence of such factors as price corrections applied to the incomes received by different social classes which would be preferable to the simple deflation of incomes by a single "price index" applied to all categories of goods for all classes. Nor has any provision been made for the consumption of public goods or services or for collective consumption of any sort. This type of adjustment might heighten the already strong urban-rural differences or the considerable disparity between major producing sectors.

A more formidable technical qualification deals with the assumption of unity for the elasticity of the utility of income which, in our calculations, had been set constant at its upper permissible limit. Mera (1967) suggests a more "realistic" figure which ranges from .80 to .95 on the basis of measurements of data from the U.S., Canada, and Japan. It might be more realistic to allow for an elasticity which declines as income rises for a given society, the notorious stinginess and greed of the rich notwithstanding. The elasticity itself may vary as well between countries as a function of the basic income level, the degree of exposure to the richer countries, or of self-reliance and inward-orientation.

The more philosophical objections to neoclassical social welfare include a note that the usual conditions for Pareto optimality are violated in the welfare
comparisons over time by the reality of social mobility. As long as some groups are downwardly mobile, then technically we are at a loss to compare the before-and-after states. Even if all incomes rise, as in Puerto Rico between 1953 and 1963, the individuals whose incomes rise are not the same ones as the formerly poor; the locations of all the players in the distribution have not shifted uniformly upward. The comparison of the two time-snapshots of a society, one taken prior to the increase and one afterward, it is said, can lead to a finding of "higher" actual welfare only if the "losing" groups are compensated. Such compensation is usually carried out mentally, if at all. The subsidies remain imaginary. Real deprivation, either absolute or relative, lies at the heart of the growth process.

Gintis (1972) adds that the assumptions of constant preferences is violated as income rises. Increasing income can very well leave an individual worse off since "...the very process of consuming the new bundle changes the individual's preferences." 35

This criticism of neoclassical welfare economics is especially relevant to the Latin American countries since the pattern of economic development is tantamount to introducing "revolutionary" habits and tastes through new objects and their associated cultures, such as the auto, electrical appliances, synthetic textiles, drugs, in short, a new style of living which looks, feels and smells strikingly American. 36

Gintis argues further that an extended or complete vision of social welfare depends not so much on the actual quantity of consumed goods and services, but on the "path of development of the individual's capacities for undertaking activity." In capitalist society, new techniques are introduced to reduce costs, not to enhance an individual's welfare, well-being, or job-satisfaction. Motivation is sustained through material benefits--through access and exposure to new commodities, and the consumption of these commodities then influences
new preferences and capacities. There is no necessary relationship between
jobs which yield higher incomes, on the one hand, and higher competence,
satisfaction, or individual development, on the other. On the contrary, "new"
jobs usually spell a further extension of the technical division of labor, a
simplification of work content, and the decomposition and degradation of labor
skills.

Nor have we admitted other social, nonmaterial qualities to be elements
in our welfare evaluation, such as the moral and ethical dimensions, the social
relations which characterize a society, its manner of caring, of sharing and of
serving its own people. Nor have we emphasized, except in passing, the inherent
incompatibility between efficiency and equity once the system is dynamized.
Increased equity under capitalism opposes efficiency. In its simplest manifes-
tation, the centralization of power, the growth of the capitalist city, the
emphasis on luxury production and consumption, in short, the rejection of equity
on every level, is the conclusion of the forward movement of the process. To
infer broad "welfare" propositions from the very barest skeletal structures
for a particular society in but one short stage of its evolution, violates the
broader charter of human concern, although such conclusions would be perfectly
consistent within the commonplace neoclassical paradigm.

In concluding, therefore, we reject the notion of the state as the bearer
of the social welfare function, for only a people can express by what standard
their misery or satisfaction should be judged. We reject as well the notion of
a trade-off between equity and efficiency implicit in the very functional form
we have applied in the empirical study. Finally, we are forced to qualify
almost every aspect of the already narrow elements of social welfare tested here.
This investigation may have told us something of the degree, shape, and nature
of the inequities observed in the growth process. Not only do these findings
challenge us to extend our ideal of social welfare, but they also drive home the immediacy of altering those institutions which inhibit our realization of that ideal.
Footnotes

1 See de V. Graaf (1967) and Phelps (1971).


4 See, for example, Chenery, et al. (1974).

5 See Cline (1972), Adelman and Robinson (1975), Weisskoff (1976), among others.

6 See Hymer (1972) and Mera (1975).

7 To my knowledge, the original Mera (1967) paper has not been published, although his work has eventually seen aspects independently derived by Atkinson (1969) and Champernowne (1975). I first applied Mera's scheme in Weisskoff (1969) and have since expanded the sample.

8 See de V. Graaf (1967), especially Chapter IV, "Potential Welfare."

9 See Thurow (1971).

10 Dalton (1921), p. 349.

11 Mera (1967), p. 36ff. tests the function for each of the above properties. He notes that the CES production function (p. 45, n. 1) is also of this same family of functions. See G. H. Hardy, et al., (1959), Chapter II, "Elementary Mean Values" for proofs.

12 Aigner (1967), p. 16. Note that:

\[ W_k = \sum_{i=1}^{u_i} \left( \frac{u_i}{\theta} + 1 \right)^{-2} \]

hence the increment to social welfare is much greater for a given utility distributed to families close to or less than the threshold than if the same utility were received by wealthier families. Aigner uses \( \theta = \$5,000 \) for estimating welfare of U.S. states. Our choice of \( \theta \) is explained in Section IV, n. 16.
Mera (1967), pp. 26-31, uses consumption rather than income as the determinant of utility.

Mera (1967), p. 32, and Aigner (1967), p. 14, perform identical proofs. Both maximize the social welfare function $W(u_1, ..., u_M)$, where $u_i = f(x_i)$ subject to the income constraint that

$$\sum_i x_i = X,$$

where $X$ is the total national income and $x_i$ is the income of the $i$th family. Setting the first derivative equal to zero yields $x_i = X/M$ for all individuals. Second order conditions specify the form of the utility function. Aigner never places conditions on the utility function. However, by entering "untransformed" income directly as utility, he has implicitly adopted $n = 1$ of equation (7) above.

Dalton (1920) emphasizes the need for domestic purchasing power equivalents as well for domestic comparisons in n. 2, p. 356. Conclusions regarding the real impact of observed changes in money income received by different groups over time may be qualified by the effects of changing relative prices. Real purchasing power differences may be most important in the urban-rural and regional comparisons of welfare.

Dalton favors the use of the ratio of the logs of arithmetic to geometric income instead of the untransformed ratios such as those used here because, he writes, "proportionate additions or subtractions will leave inequality unaffected." An equity ratio of the untransformed means, he wrote, is "a distinct, and inferior, measure...not a mere simplification" of his log-transformation. See Dalton (1920), n. 1, p. 356.

The choice of the arithmetic mean function as a measure of actual as well as potential social welfare, it should be noted, does reflect a theoretically acceptable welfare function, which, in effect, ignores any change in the
distribution of income and corresponds to the practice of implicitly equating per capita income to welfare.

Aigner's measure, \( W_R \), of equation (7) deserves further comment. Like the other measures, \( W_R \) is maximized if each family were to receive the identical income. But the measure is more responsive to changes in those families whose income is close to the parameter, \( \theta \), than to changes in the incomes of families more distant from the established parameter.

Aigner's welfare function, \( W_R \), of equation (6) is estimated as:

\[
W_R = \sum_{j=1}^{M} \left( \frac{\theta \cdot x_j \cdot f(x_j)}{(\theta + x_j)^2} \right) \quad j = 1, \ldots, M.
\]

where \( \theta \) = an arbitrary parameter. For Puerto Rico, \( \theta \) was set at $2,000, to correspond to the "minimum acceptable standard" of living described in the Puerto Rico Governor's Report (1964), p. 41ff. For other countries \( \theta \) was set at three-fourths the average income in national currency.

The geometric mean function is estimated as:

\[
W_G = \text{antilog} \left\{ \frac{1}{M} \sum_{j=1}^{M} f(x_j) \log x_j \right\} \quad j = 1, 2, \ldots, M
\]

where \( M = \text{total number of families}; N = \text{total number of income-brackets}; \)
\( \Sigma f(x_j) = \text{sum of weights}; x_j = \text{average income of families in the } j^{th} \text{ income-bracket}; f(x_j) = \text{number of families in the } j^{th} \text{ income-bracket}. \)

The harmonic mean function is estimated as:

\[
W_H = M \left[ \sum_{j=1}^{N} \frac{f(x_j)}{x_j} \right]^{-1} \quad j = 1, \ldots, N.
\]

Time series comparisons may be capturing cyclical as well as growth effects. See Weisskoff (1970).

For Brazil, two different estimates are available which refer to the same years. We present both to the reader (Table 1A, lines 3-4 and 5-6;
Real incomes are indexed to the United States average of 1960-62 so that efficiency as well as equity might vary zero to unity. Despite this diminution of the efficiency scale, changes in the index of social welfare are still dominated by the changes of the arithmetic mean and not of the equity factors.

The equity indices (columns 3-6) vary from zero (the least equal) to unity (perfect equality). The Gini coefficient, a conventional index of inequality, which normally varies from zero as the most equal to unity for extreme inequality, is here (col. 6) subtracted from unity to be comparable to the other measures. The Gini ratio and its corresponding welfare index do not meet the neoclassical welfare criteria outlined above, but we include it here to facilitate comparison with the other "specialists" equity measures. See Atkinson (1969) and Champernowne (1974).

In the case of the Fishlow data for Brazil, the Gini welfare index indicates no change at all (.049) between the years 1960 and 1970.

The plotting of efficiency and equity on the iso-contour map (as in Figure 1A), indicates the movement of Brazil (Fishlow data) toward a lower iso-welfare line from 1960 to 1970, while the other observations for Brazil (Langoni data), for Argentina, and for Puerto Rico, indicate a downward (loss of equity) and rightward (growth of income) movement resulting in a "net" rise in welfare, as calculated by these indices.

For further discussion of the pooling of time-series and cross-section data for developing countries and the testing of between- and within-country effects, see Weisskoff (1971).
Due, for example, to differences in the cost of living or for income in-kind. Rural incomes may thus be underestimated consistently, but certain industrial prices are higher in the rural zones. No adjustments of the original data sources have been made here.

These are harmonic equity ($E_R$) for Peru and 1963 Puerto Rico; Aigner equity ($E_R$) for Colombia and 1963 Puerto Rico; and Gini equity ($E_{1-Gini}$) for Colombia.

In the United States, these ratios prove relatively stable during this period although the divergence between the sectoral means increased.

Since the inter-sectoral welfare ratios are calculated as the product of the ratios of efficiency and equity, and since no corrections have been made on the efficiency measure for purchasing power differences between sectoral incomes, the welfare ratio themselves reduce to the ratios of the simple equity measures.

Manufacturing includes mining and construction. Commerce includes retailing, wholesaling, and finance. Services include a broad range of activities, such as transport, communications, public administration, public utilities, and professional services.

The efficiency indices in Table 4 for Puerto Rico and Argentina are estimated in constant prices for each national currency. Thus, the absolute welfare measures are comparable between years and sectors for each country but not between countries.
He might even cite Champernowne's warning (1974) p. 807:

This suggests that the choice of index could quite frequently decide the answer to such questions as whether inequality had increased or decreased in a country over a decade. In making the choice one should accordingly be very clear in what type of inequality one is primarily interested.

The quotation is from Gintis (1972) p. 597, n.9, who adds,

No such practical obfuscation is possible in the theory of the firm, as the present political structure of the firm (bureaucratic order and hierarchical control) is totalitarian in the pure political sense.

Two roads diverged in a yellow wood,  
And sorry I could not travel both  
And be one traveler, long stood  
And looked down one as far as I could  
To where it bent in the undergrowth;

Then took the other ................
.................................
Oh, I kept the first for another day!  
Yet knowing how way leads on to way,  
I doubted if I should ever come back.  
.................................
And that has made all the difference.

—Robert Frost, "The Road Not Taken."

30 See Phelps (1973), p.333

31 Thurow (1971), p. 327, makes equity a term in the individual utility function. Individuals who "prefer" positive equity might also be willing to pay for a more equal society through taxes or charity. The benefits may range, according to Thurow, from greater political stability to a reduction in the number of paupers and rapists in the city streets.

32 "What are the empirical effects of the income distribution on crime, social stability, political stability, or any other characteristic of [capitalist] society?" Thurow (1971), pp. 335-6, concludes agnostically. "We just do not know."

33 See Mera (1967), p. 34. The empirical findings are related in Mera (1968), pp. 120-22.
Firsch (1959), p. 188-89 cites Johansen's method for demonstrating the variation of money flexibility (elasticity of the marginal utility of income) by income class for Norway. This method is also reported in Johansen (1964).

Frisch writes, "It would be a very promising research project to determine \( \omega \) for different types of populations. A universal 'atlas' of the values of \( \omega \) should be constructed. It would serve an extremely useful purpose in demand analysis."

Applying a single own-price elasticity for food from a pooled cross-section of sixteen low-income countries (Weisskoff, 1971) to the food budget share and expenditure elasticities obtained from purely national data, I have estimated "national" money flexibilities which vary from \(-0.87\) for Nairobi, \(-0.93\) for Israel, \(-1.44\) for Ireland, \(-1.77\) for Puerto Rico, and \(-1.82\) for Mexico. By applying expenditure elasticities and budget shares estimated for different income classes within Puerto Rico to a single overall price-elasticity, I have found that Firsch's money flexibility falls in absolute terms from \(-2.55\) for the lowest class to \(-1.29\) for the highest income group.

The provision for the variation in the elasticity of the utility (or marginal utility) of money would necessarily affect the international and intertemporal comparisons of cardinal welfare calculated for the Latin American countries and any conclusions drawn from these findings.


The process of "import substitution" in Third World countries may be seen as the post-war reorientation of these nations' industries toward the style of mass consumption living which first became popularized in the US in the 1920's. In smaller countries whose home market is believed too narrow to support local production, the success of "export promotion" (and sometimes its variant, "export substitution") guarantees the necessary foreign exchange to sustain the direct
imports of these newly-desired contrivances. In Latin America, the process of import substitution has been most complete in Brazil, Argentina, and Chile, while export promotion has been the historic pattern in the Caribbean, especially of industrial manufactures in Puerto Rico.

Gintis (1972), p. 587-8 concludes:

Thus a correct extension of neoclassical welfare economics recognizes that individual welfare depends on the unit-objects [social entities] available, as well as on his/her pattern of individual development; that unit-objects occur in alternative "feasible" bundles...; and that changes in the structure of economic institutions produce changes in the patterns of feasible unit-objects and the constellation of compatible paths of individual development.
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