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An Islamic Perspective on Inequality in Pakistan

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This paper examines the distribution of income in Pakistan, and in each of its four provinces, from an explicit and formal Islamic perspective. A cardinally significant Atkinson-Kolm-Sen relative index of inequality reflecting that perspective is proposed and computed from the full *HIES* data series for the years 1984-85, 1985-86, 1986-87, and 1987-88. There is evidence of a significant decline in overall inequality in Pakistan from 1984-85 to 1987-88, but the level of inequality remains very high. Inter-province and inter-urban/rural differences in inequality profiles within Pakistan and each of its provinces are found to be generally less significant than intra-province and intra-urban/rural differences.

1. INTRODUCTION

This paper presents new results from a study of income distribution in Pakistan over the period 1984 to 1988. Income distribution in Pakistan has been the subject of a good deal of research in the past, with contributions by Kruijk and De Leeuwe (1985); Kruijk (1986); Ahmad and Ludlow (1989); Havinga, van den Andel, Haanappel and Louter (1990) and Jehle (1991) among the most recent.

The present work both extends – and diverges – from that to date in two important respects. First, it proceeds from an explicit and formal Islamic perspective on the question of income distribution. Second, all reported measurements have been computed from the full data sets collected in Pakistan's, *Household Income and Expenditure Survey* (*HIES*) for the years 1984-85, 1985-86, 1986-87 and 1987-88. Most previous work has had to rely on published summaries of this data, with the exception of Havinga *et al.* (1990), who report results of an analysis of the full 1984-85 *HIES* data, alone, and Ahmad and Ludlow (1989) who report for the early years 1976-77, 1979, and 1984-85. Working from the complete data sets, it becomes unnecessary to impose any *ad hoc* assumptions about distribution within published summary ranges.

Pryor (1985) has described the outlines of an Islamic economic system in the non-Islamic literature. As-Sadr (1982) provides more detail and compares the

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Islamic system to alternative systems from an Islamic point of view. The characteristics of an Islamic economic system are not well understood in the West, in spite of the fact that such strategically important countries as Iran, Saudi Arabia, Sudan, and Pakistan have each adopted or attempted to adopt, significant elements of that system.

Islamic economic doctrine is distinguished from others by its elaborate religious foundations. The Islamic economic system – arising out of the broader social, moral, and religious doctrines of an absolutist Islamic philosophy – is distinguished from both Capitalist and Socialist systems in at least three important respects. First, property rights (either individual or State) are neither inalienable nor absolute. Instead, Islam views Man as the trustee of *Allah*'s property, and the right to property is inseparable from the responsibilities of trusteeship. Second, individual economic freedom is given broad scope, but is constrained by the moral responsibility to choose a course of action that enhances the welfare of others. Finally, Islam asserts the primacy of *social justice* over all other social objectives, and Islamic economic institutions must serve that end.

Pakistan is one of the most populous Islamic Republics in the world, and recent enactment of the *Shariat* bill – elevating the *Koran* and *Sunnah* to the status of supreme law of the land – represents a significant step in the process of "Islamisation" of the Pakistani economy. The wisdom and course of that process will most certainly continue to be debated in Pakistan for some time to come, and policy relating to the distribution of income and wealth promises to be central to that debate. Yet it is quite clear the debate will need to be better structured and better informed before it can truly be joined. Naqvi (1981) has suggested that one way to structure such debate is by reference to the appropriate social welfare function to adopt as a guide to policy-making and policy-assessment. To better inform that debate, we must turn to the data. Jehle (1991) has examined the record of income distribution in Pakistan over the period 1984 to 1988 from an explicit social welfare perspective embodying a wide range of "secular", or non-Islamic, distributional values. The purpose of this paper is to examine that record over the same period from an explicit and formal Islamic perspective.

Section 2 briefly describes the social welfare approach to inequality measurement, and proposes a cardinally significant ethical index of relative inequality consonant with the Islamic perspective on income distribution. Section 3 describes the data. In Section 4, computed indices for all of Pakistan and each of its four provinces, for each of the four years, are presented and discussed. While there is evidence of a significant decline in overall inequality in Pakistan from 1984-85 to 1987-88, the level of inequality remains very high. Inter-province and inter-urban/rural differences in inequality profiles within Pakistan and each of its provinces are found to be generally less significant than intra-province and intra-

urban/rural differences. Concluding comments are offered in Section 5.

2. MEASURING INEQUALITY

2. 1. The Social Welfare Approach

An extremely wide variety of statistical measures and index numbers have been used to measure income inequality in the past. Chakravarty (1990) catalogues and explores the properties of a great many of these. Sen (1973) divides all such measures into two broad classes. One he describes as *objective,* or purely statistical measures of dispersion in incomes, such as the variance, the coefficient of variation, the Lorenz curve and the Gini coefficient. The other class he describes as *normative.* Normative measures of income inequality, "...try to measure inequality in terms of some *normative* notion of social welfare so that a higher degree of inequality corresponds to a lower level of social welfare for a given total of income" (p. 2). An early example of this approach to inequality measurement can be found in Dalton (1920). More recent development has been given by Kolm (1969); Atkinson (1970); Sen (1973); Blackorby and Donaldson (1978); and Pyatt (1987), among others.

While Sen's distinction may be helpful in some respects, it is potentially misleading in others, as Sen himself recognises. When studying inequality, one is rarely interested in "pure description" of the income distribution – indeed any such exercise would be rather sterile and uninteresting. Instead, one usually seeks to compare and *rank* alternative distributions as "better" or "worse" than one another. All such attempts are, of course, value-laden, whether the investigator explicitly intends it or not, since the notions "better" and "worse", or "improved" and "worsened", are themselves inherently value-dependent. This is now well-recognised in the literature, and the distinction between "objective" and "normative" measures of income inequality has begun to disappear.[1]

In the general social welfare approach to inequality measurement, one begins with an arbitrary criterion of social welfare and proceeds to build from those foundations to the corresponding index of inequality which reflects that criterion. Consider, for example, a society of N individuals, each having income $y_i > 0$, $i = 1...N$. We can represent the distribution of income by the vector $Y \varepsilon IR^N_{++}$ where $Y = (y_1, \ldots, y_N)$. A social evaluation function is a real valued mapping $W: IR^N_{++} \rightarrow IR$ such that, for any Y^1 and Y^2 in IR^N_{++}, $W(Y^1)$ is greater than, equal to, or less than $W(Y^2)$, if and only if the distribution Y^1 is socially preferred to, socially indifferent

[1]In an interesting paper, Blackorby and Donaldson (1978) have shown how to recover from any (ostensibly objective) scale-invariant summary statistic of income distribution the particular class of social evaluation functions which imply that statistic as a relative index of inequality. Many popular measures of income inequality, such as the Gini coefficient, and the Theil index, are shown to be implied by social welfare criteria few would completely embrace.

to, or socially worse than the distribution Y^2, respectively.[2]

The "social values" of the investigator are reflected in the properties with which the function W is endowed. At a minimum, there is general agreement that any social welfare function should satisfy a *Pareto* condition, an *anonymity* condition, and reflect no specific bias in favour of *inequality* in the distribution of income. Together, these conditions require that the social welfare function W be *non-decreasing, symmetric*, and *quasiconcave*.[3]

The level-sets, or social indifference curves, for three such functions are superimposed on Figure 1. That W be non-decreasing simply requires that social

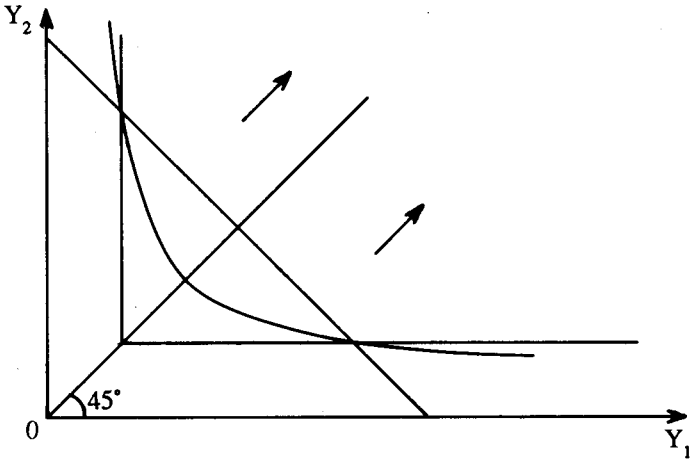

Fig. 1. Social Indifference Curves for three Non-Decreasing, Symmetric and Quasiconcave Social Welfare Functions

indifference curves not be positively sloped, and not "increase southeasterly". Symmetry requires that they be mirror-images of each other across the 45°-line. Quasiconcavity is a "curvature" requirement, stipulating that the social indifference curves not be "convex-toward-the-origin". Clearly these requirements, together, are sufficiently mild to encompass a wide range of distributional values. These may include utilitarian values, which prescribe complete social indifference to inequality and exclusive social concern with the level of total income. They may include values which find *some* social disutility in equality *per se*, but which at some point

[2]We preserve here the linguistic distinction drawn in the literature between social *welfare* functions, defined over individuals' utility functions, and social *evaluation* functions, defined directly over individuals' incomes. Though the distinction is often purely semantic, it seems worth preserving to avoid confusion.

[3]W is quasiconcave iff, for all Y^1 and Y^2 in IR^N_{++}, it satisfies $W(Y^t) \geq \min [W(Y^1),W(Y^2)]$, where $Y^t \equiv tY^1 + (1-t)Y^2)$, for $0 \leq t \leq 1$.

become willing to accept more inequality in exchange for a higher total of income. Values such as these are reflected by strictly convex-outward social indifference curves. Heuristically, the greater the degree of curvature in the social indifference curves, the greater the bias in favour of *equality* that is reflected. Finally, these requirements may also encompass "absolutist" views on income inequality, such as those reflected by the right-angled, "Rawlsian" social indifference curves. In the Rawlsian system, there is *absolute* social intolerance of inequality, and income distributions must be ranked solely according to the income of the least well-off member of society.

Any social evaluation function can be used to construct ethical indices of inequality. If the social evaluation function is homothetic, the corresponding index will be a *relative* index. A relative index of inequality is one which depends only on inequality in income *shares*, and not on (absolute) income differences.[4] An important class of ethical relative indices of inequality – indices which can be viewed as implied by (and implying) explicit social evaluation functions – has developed out of the work of Atkinson (1970); Kolm (1969) and Sen (1973) (AKS). AKS indices depend upon the notion of the *equally distributed equivalent income*, y_e. This is that income which, if given to each individual in society, would result in a distribution of income which is ethically indifferent to the existing one, according to the underlying criterion of social welfare.

Formally, if W is any social evaluation function, $Y = (y_1, \ldots, y_N)$ the income distribution in question, and $e = (1,\ldots,1)$ is an N-vector of ones, then y_e is defined implicitly by

$$W(Y) = W(y_e \cdot e). \qquad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \qquad (1)$$

Letting $\mu(Y) = \sum_{i=1}^{N} y_i / N$ denote mean income, the AKS index corresponding to W is defined as

$$I(Y) = 1 - \frac{y_e}{\mu(Y)}, \qquad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \qquad (2)$$

for $\mu(Y) \neq 0$. $I(Y)$ ranges continuously between zero and 1. $I(Y)$ takes the value zero when there is complete equality, and larger values of $I(Y)$ indicate greater inequality. $I(Y)$ is a relative index if and only if it is homogeneous of degree zero. This, in

[4]Absolute indices of inequality depend on absolute income differences only. In what follows, it should become clear that the practical distinction between relative and absolute indices in the special case we shall consider largely disappears. The decision to concentrate here on relative indices is essentially a matter of the author's personal taste. For completeness, however, an appendix is provided which describes a certain class of absolute indices in more detail, and reproduces the empirical results to follow in that alternative form.

turn, will be the case if and only if the social welfare function, $W(Y)$, is homothetic [Blackorby and Donaldson (1980)].

AKS indices have several important advantages over other alternatives, such as the Gini coefficient or Theil index. First, of course, they embody an explicit set of social values which the investigator may examine and accept or reject in advance. Given those values, though, for fixed population size and constant mean income, the AKS index will always be *normatively* significant. To see this, note from (2) that, for any two income vectors Y^1 and Y^2 in IR^N_{++}, where $\mu(Y^1) = \mu(Y^2)$, we will have $I(Y^1)$ greater than, equal to, or less than $I(Y^2)$, if and only if $W(Y^1)$ is less than, equal to, or greater than $W(Y^2)$, respectively. Second, the AKS index is always *cardinally* significant, as well. Specifically, $I(Y)$ in (2) always measures the *percentage of total income that can be saved by moving from the existing distribution to one of complete equality with social indifference.*

To illustrate, consider the two-income society depicted in Figure 2. There, a social indifference curve from some arbitrary social evaluation function passes through the initial income distribution given by $Y^* = (y^*_1, y^*_2)$. The straight line through Y^*, perpendicular to the 45°-line, intersects the horizontal axis at the point $y^*_1 + y^*_2$, indicating total income in the distribution Y^*. The equally distributed income, y_e, is found by locating the point at which the 45°-line intersects the social indifference curve through Y^*. The parallel straight line, tangent to the social indifference curve at that point of intersection, crosses the horizontal axis at the point $2y_e$. The AKS index of *equality* is obtained by taking the ratio of the distance along

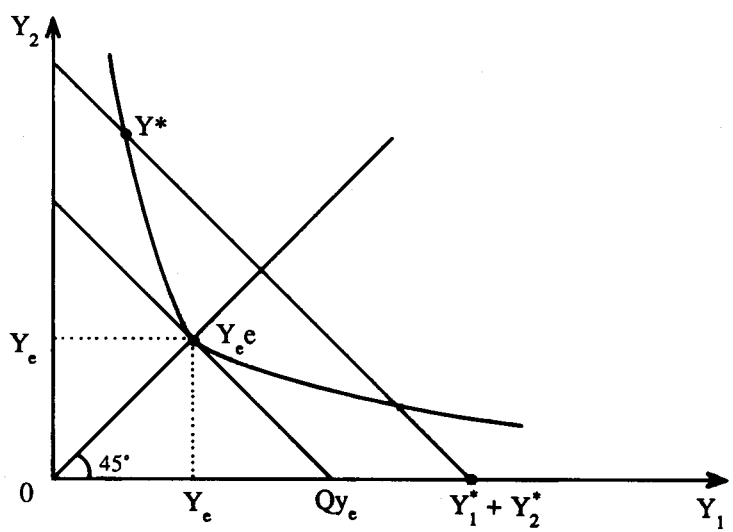

Fig. 2. Cardinally Significant AKS Ethical Indices of Inequality

the 45°-line from the origin to the point of intersection with the social indifference curve through Y^*, to the distance from the origin to the straight line through y^*. This is equivalent to the ratio of the intercepts of the two parallel straight lines,

$$\frac{2y^2}{y^*_1 + y^*_2} = \frac{y_e}{\frac{y^*_1 + y^*_2}{2}} = \frac{y_e}{\mu(Y^*)} . \quad \ldots \quad (3)$$

The greater the curvature of the social indifference curve through Y^*, the smaller will be the extent of measured *equality* in the distribution Y^*. To obtain the AKS index of *inequality*, (3) is merely subtracted from unity. Thus, greater curvature to the social indifference curve corresponds to greater inequality in Y^*, as measured by the AKS index. Finally, subtracting (3) from unity gives

$$I(Y^*) = 1 - \frac{2y_e}{y^*_1 + y^*_2} = \frac{(y^*_1 + y^*_2) - 2y_e}{y^*_1 + y^*_2}$$

the percent of total income in the distribution Y^* which can be saved by distributing income equally at (y_e, y_e), with no loss in social welfare.

AKS indices may also be *decomposed*, in order to isolate both inter- and intra-group components of overall inequality within arbitrary (exhaustive) partitions of the population. Following Blackorby, Donaldson and Auersperg (1984) (BDA), let $N^* = (N^1,\ldots,N^m)$ be an arbitrary partition of the population of size N. Let y^j denote the sub-vector containing only the incomes of members of subgroup j, $j = 1,\ldots,m$, and rewrite the income vector as $Y = (y^1,\ldots, y^m)$. Next, let y_e denote the equally distributed income for the whole population, as before, and let y^j_e, $j = 1,\ldots, m$ be the equally distributed income for subgroup j obtained as that income which, if given to all members of subgroup j, yields the same level of social welfare as the original distribution Y. Now let n_j denote the cardinality of N^j, and let e_{nj} be an n_j-dimensional vector of ones. Finally, consider the three reference vectors,

$$\begin{aligned} &\text{(a)} \quad Y = (y^1,\ldots, y^m), \\ &\text{(b)} \quad (y^1_e e_{n1},\ldots, y^m_e e_{nm}), \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (4) \\ &\text{(c)} \quad (y_e e). \end{aligned}$$

Notice that all three vectors give rise to the same level of social welfare, $W(Y)$.

However, in (b) there is no intra-group inequality, and in (c) there is no inequality at all.

We have remarked that the index $I(Y)$ in (2) measures the percent of income saved in moving with social indifference from the distribution Y to one with equality – i.e. the percent of income saved in moving from (a) to (c) in (4). In the BDA decomposition, intra-group inequality is measured by the percent of income saved in moving from the initial distribution y to one with no intra-group inequality – i.e. in moving from (a) to (b). Inter-group inequality is measured by the percent of income saved in moving (with social indifference) from a state of no intra-group inequality to a state of no inequality at all – i.e. in moving from (b) to (c). The BDA index of intra-group inequality, $I_A(Y)$, and index of inter-group inequality, $I_R(Y)$, are therefore given by

$$I_A(Y) = \frac{N\mu(Y) - \sum_{k=1}^{m} n_k y_e^k}{N\mu(Y)},$$

$$I_R(Y) = \frac{\sum_{k=1}^{m} n_k y_e^k - n y_e}{\sum_{k=1}^{m} n_k y_e^k}, \qquad \ldots \quad \ldots \quad \ldots \quad \ldots \qquad (5)$$

respectively.

Usual decomposition methods concentrate on inequality in subgroup mean incomes, and result in an overall index of inequality which is the sum of the intra-group and inter-group components [Cowell (1977, 1980); Shorrocks (1980)]. The BDA decomposition measures inter-group inequality as inequality between subgroup equally distributed incomes, not subgroup mean incomes. It therefore has greater (and clearer) *ethical* significance than other techniques. However, the BDA decomposition – while consistent in aggregation – does not lead to a simple linear aggregation rule. Instead, the overall, intra-group, and inter-group indices are related as follows:

$$I(Y) = I_A(Y) + I_R(Y) - I_A(Y)I_R(Y), \qquad \ldots \quad \ldots \quad \ldots \quad \ldots \qquad (6)$$

as can easily be verified.[5]

[5]If one wants to think in terms of indices of *equality*, instead of inequality, one has $E(Y) = 1 - I(Y)$, $E_A(Y) = 1 - I_A(Y)$, and $E_R(Y) = 1 - I_R(Y)$. The aggregation rule then becomes a multiplicative one, $E(Y) = E_A(Y)E_R(Y)$.

2.2. An Islamic Perspective on Inequality

It is quite natural and appropriate to adopt the normative approach to inequality measurement just described in any study of income distribution from an Islamic perspective. From that perspective, there need be no pretense whatsoever to "scientific objectivity" as one approaches the subject. Quite the contrary. Islam not only adopts an overtly value-laden view on distribution, it is quite precise in describing exactly what the appropriate individual and social values in this regard should be. Naqvi (1981) examines the range of economic and theological literature on Islam and argues convincingly that in matters of social policy, the normative values prescribed by Islam accord *exactly* with those advanced by John Rawls (1971) in his theory of social justice. In Islam, as in Rawls's theory, there is a moral obligation upon society to gauge social policy by reference to its effect on the situation of society's least well-off member. The goal of all economic and social policy in Islam then becomes maximisation of the welfare of society's least well-off member –Rawls's *maximin* criterion.[6]

To construct the special case of an Islamic AKS index of inequality, we begin with the Rawlsian social evaluation function,[7]

$$W(Y) = \min\{y_1, \ldots, y_N\}, \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (7)$$

which we simplify by the notation $W(Y) = \min_i\{y_i\}$. In this case, the equally distributed income is (trivially) obtained from (1) as

$$y_e = \min_i\{y_i\}, \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (8)$$

[6]Naqvi's (1981) view on the requirements of Islam in this respect are not universally shared, even among Islamic economists. Hasan (1983), for example, sees the requirement as one for a common "floor"on all incomes, rather than complete equality.

[7]The Rawlsian social evaluation function may be seen as a limiting case of more general, *constant elasticity of substitution*, or *CES*, forms, $W^*(W_r(Y))$, where $W^*: IR \to IR$ is increasing, and

$$W_r(Y) = \begin{cases} \left[\frac{1}{N}\sum_{i=1}^{N} y_i^{\,r}\right]^{1/r}, & r \neq 0, r \leq 1; \\ \prod_{i=1}^{N} y_i^{1/N}, & r = 0. \end{cases}$$

CES forms are symmetric means of order r and, for any choice of parameter $r \leq 1$, the resulting social welfare function is symmetric, increasing, and quasiconcave. The parameter r can be interpreted as an "ethical parameter", subject to the investigator's choices. For $r = 1$, the social welfare function is the utilitarian form. As r decreases away from unity, a greater bias in favour of *equality* in income distribution is imposed. As $r \to -\infty$, W_r converges to $W_{-\infty} = \min\{y_1, \ldots, y_N\}$, the Rawlsian social evaluation function. See Jehle (1991a) for more on *CES* social evaluation functions.

and the corresponding AKS index from (2) as

$$I(Y) = 1 - \min_i\{y_i\}/\mu(Y). \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (9)$$

We adopt (9) as the relative index of inequality appropriate to an Islamic perspective on the subject. Like all AKS indices, (9) is normatively significant over distributions with constant mean income and fixed population. It is always cardinally significant, measuring the percent of income that can be saved by moving to complete equality with social indifference. It may also be decomposed along the lines of (5) and (6) to isolate both intra- and inter-group components of overall inequality. In the following section, we describe the Pakistani data to which (9) will subsequently be applied.

3. THE DATA

All computations reported in this paper were performed on the complete set of data collected in the annual *Household Income and Expenditure Survey* (*HIES*) of Pakistan for the years 1984-85, 1985-86, 1986-87 and 1987-88, made available to the author by the Pakistan's Federal Bureau of Statistics. Data for 1987-88 is the most recent year for which the complete data set is available at present. The *HIES* is the most complete and representative survey of income and expenditure items in Pakistan, with all income and expenditure reported as monthly figures. The sample size in the *HIES* is quite large, ranging from 16,581 households in 1984-85 to 18,145 households in 1987-88. In 1984-85, 7,461 urban households and 9,120 rural households were surveyed. By the 1987-88 survey, those numbers had both increased to 8,384 and 9,761, respectively.

Our principal interest is in the distribution of income, insofar as income most clearly determines both relative and absolute economic status. However, it is widely accepted that income items are less reliably reported to surveyors than are expenditure items [Ahmad and Ludlow (1989); Havinga *et al.* (1990); Malik (1991)]. Since income and expenditure are clearly correlated, this paper follows recent convention and adopts reported *expenditure* as a proxy for income. Since we can expect the correlation between expenditure and income to be less than perfect, however, inferences drawn regarding the distribution of income on the basis of computations performed on expenditure data must be correspondingly qualified. In general, one expects expenditure to be more equally distributed than income.

The counting unit in the *HIES* survey is the household, and an analysis of inequality among households could, of course, be conducted [*e.g.*, de Kruijk (1986)]. However, it is quite clear that differences among households in the number, age, and earning status of household members make the results of such

cross-household comparisons difficult to interpret. Consequently, this paper follows Havinga *et al.* (1990) and corrects the data for household size and composition using an equivalence scale proposed by Wasay (1977). The resulting reference unit is a single-earner household, or single "adult equivalent". The number of adult equivalents in each household is determined as follows:

$$AE = x_1 + 0.8 * x_2 + 0.7 * x_3, \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (10)$$

where x_1 is the number of earners in the household, x_2 is the number of other adults in the household, and x_3 is the number of children less than ten years old.

Havinga *et al.* (1990) note some possible deficiencies in these estimates. for one, there is no "economies of scale" factor included. Second, they believe a coefficient of 0.7 on the number of children under 10 may be high, considering that the average age of that group in the 1984-85 *HIES* data they examined was less than five years old. Nonetheless, these figures are accepted for purposes of the present study since, imperfect as they may be, they represent the current state of knowledge for the case of Pakistan. Moreover, adopting the same transformation scheme employed by Havinga *et al.* (1990) facilitates comparison between the results of this study and those of Havinga *et al.* (1990) for the 1984-85 data, and of Jehle (1991) for the same four years as the present study.

To summarise, monthly expenditure is used as a proxy for monthly income, and the statistical unit in all subsequent computations is the single "adult equivalent". A caveat to the reader is also warranted. As good as it may be, the *HIES* survey is probably far from perfect, and this should be borne in mind in interpreting results presented in this or any other paper based on this data. There is, for example, a rather widely held belief among researchers who have worked with this data that both "tails" in the income distribution tend to be under sampled for a variety of cultural, administrative and, perhaps, political reasons as well. Since the Islamic index of inequality used here focuses exclusively on the situation of the least well-off member of society, under-sampling of the lower tail in the distribution may have the effect of *under-stating* stating the true extent of inequality extant. The reader is therefore warned in advance to view all results critically.

4. INEQUALITY IN PAKISTAN

The Islamic index of ineqaulity (9) was computed from the full *HIES* data sets for 1984-85, 1985-86, 1986-87, and 1987-88, after transforming that data to a single-earner, adult equivalent basis, using (10). Computations were performed for all of Pakistan and each of its four provinces separately, for each of the four years. Overall inequality in Pakistan was decomposed into inter-province and intra-

province inequality, following the approach of Blackorby, Donaldson and Auersperg (1984) described in (4), (5) and (6). Similarly, overall inequality in Pakistan and in each of its four provinces separately was decomposed into intra-urban/rural and inter-urban/rural components. The computed values of all indices are reported in Tabel 1, and illustrated in Figure 3.

Looking across Pakistan as a whole, one is struck first by the sheer magnitude of measured inequality on a national level. Of course, the Islamic criterion we have adopted is quite stringent, so higher numbers than one would obtain by applying a less absolutist criterion are to be expected. Nonetheless, the impact is staggering. In 1984-85, 98 percent of total national expenditure could have been saved in Pakistan – with no loss in social welfare – by eliminating inequality at the time. However, By 1987-88, that figure had dropped to 79 percent. Moreover, there is clear evidence of a regular decline in overall inequality in Pakistan over the four years considered.

When we decompose overall national inequality into intra- and inter-province components, several insights emerge. Intra-province inequality is consistently more extreme than intra-province inequality. Intra-province inequality ranges from a high of .97 in 1984-85 to a low of .77 in 1987-88, with evidence of some regular annual decrease. The evidence on inter-province inequality over the period is more striking. From 1984-85 to 1985-86, inter-province inequality increased slightly from .61 to .69. From 1985-86 to 1986-87, however, there is a dramatic drop in the inter-province component from .69 to .10. By the final year of the study, only some 9 percent of national expenditure could be saved by eliminating inter-province inequality with social indifference. The impression is left that, by 1987-88, inter-province inequality was not a matter for serious concern, as compared to intra-province inequality.

In panel (B) of Table 1, overall national inequality is decomposed along urban-rural lines. There we see that intra-urban/rural inequality consistently dwarfs the inter-urban/rural component. The former ranges from .98 in 1984-85 to .79 by 1987-88, with a discernable downward trend until 1986-87, followed by a negligible increase in 1987-88. Inter-urban/rural inequality follows a different course over the same period. From a high of .22 in 1984-85, to .20 in 1985-86, the inter-urban/rural index drops sharply to .04 in 1986-87, with a further slight decline to .02 in 1987-88. These data therefore suggest that by 1987-88, there were no significant differences in inequality between urban and rural groups viewed nationally. Intra-urban and intra-rural inequality are by far more significant.

Panel (C) of Table 1 looks across Pakistan's four provinces and ranks them on the basis of overall inequality from 1 (worst, or most unequal), to 4 (best, or least unequal). That ranking stays relatively stable over the four years studied. In the three years 1984-85, 1986-87, and 1987-88, the ranking is exactly the same.

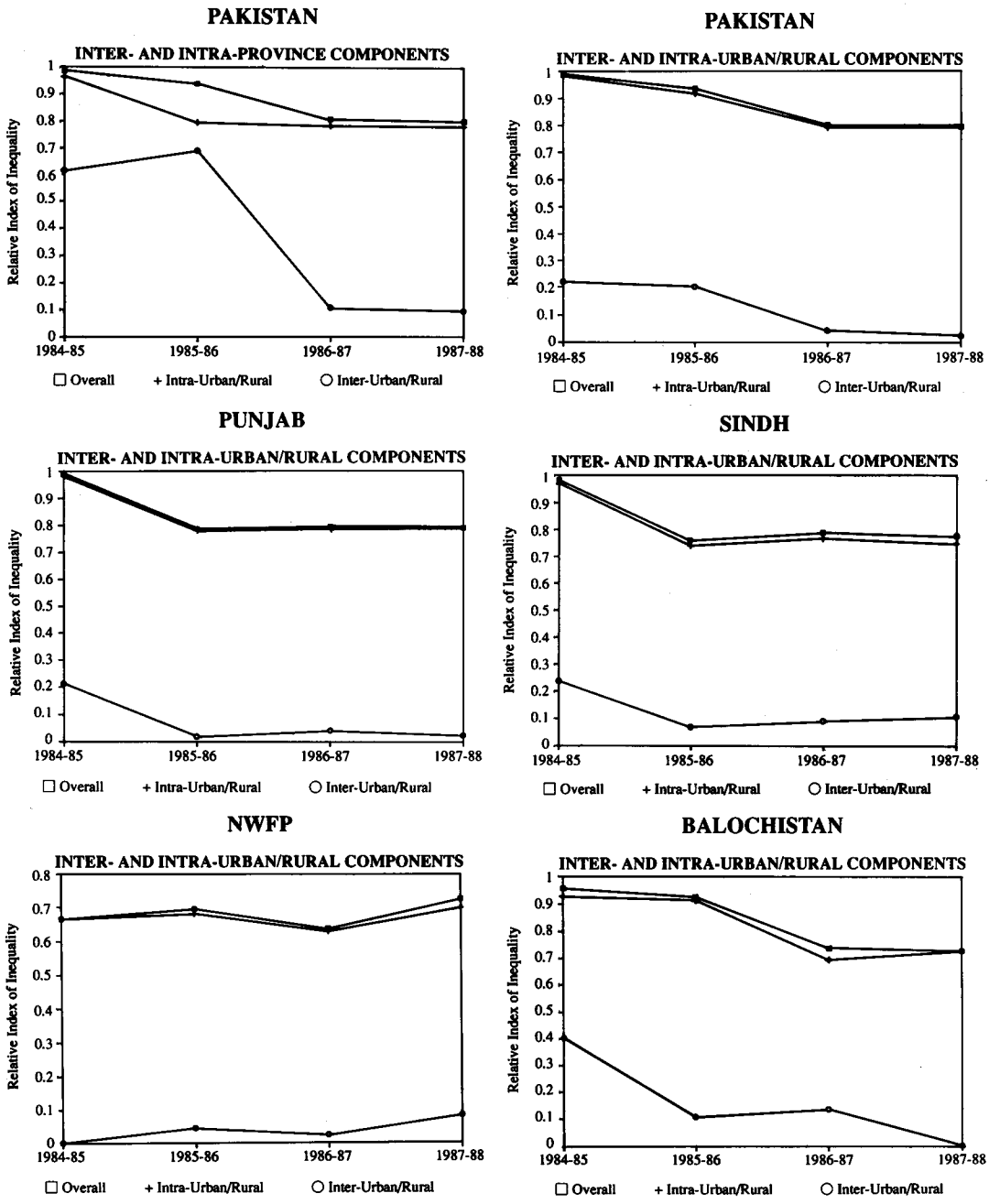

Fig. 3. Islamic Indices of Inequality for Pakistan and its Provinces

Table 1

Islamic Relative Indices of Inequality for Pakistan and its Provinces

(A) Decomposition of Inequality by Province Subgroups

	Year	Overall	Intra	Inter
Pakistan				
	1984-85	0.98665	0.96534	0.61475
	1985-86	0.93528	0.79226	0.68844
	1986-87	0.80086	0.77803	0.10286
	1987-88	0.79356	0.77270	0.09177

(B) Decomposition of Inequality by Urban-Rural Subgroups

	Year	Overall	Intra	Inter
Pakistan				
	1984-85	0.98665	0.98283	0.22219
	1985-86	0.93528	0.91875	0.20344
	1986-87	0.80086	0.79200	0.04260
	1987-88	0.79356	0.78851	0.02386
Punjab				
	1984-85	0.98600	0.98222	0.21237
	1985-86	0.78629	0.78260	0.01697
	1986-87	0.79242	0.78375	0.04009
	1987-88	0.78832	0.78360	0.02181
Sindh				
	1984-85	0.98294	0.97759	0.23862
	1985-86	0.75867	0.74113	0.06777
	1986-87	0.78757	0.76678	0.08915
	1987-88	0.77237	0.74592	0.10409
Balochistan				
	1984-85	0.95684	0.92755	0.40422
	1985-86	0.92229	0.91277	0.10909
	1986-87	0.73499	0.69297	0.13686
	1987-88	0.72323	0.72238	0.00307
NWFP				
	1984-85	0.66431	0.66419	0.00037
	1985-86	0.69095	0.67669	0.04410
	1986-87	0.62894	0.62093	0.02112
	1987-88	0.71299	0.68849	0.07866

(C) Rank Order of Provinces by Overall Index (Most to Least Unequal)

	1984-85	1985-86	1986-87	1987-88
Punjab	1	2	1	1
Sindh	2	3	2	2
Balochistan	3	1	3	3
NWFP	4	4	4	4

Inequality was greatest in Punjab, followed in order by Sindh and Balochistan, with least inequality in NWFP. This general pattern is perturbed a bit in the one year 1985-86. There, the relative ranking of Punjab, Sindh, and NWFP relative to each other remains the same, but Balochistan briefly jumps to the status of "most unequal" among the provinces, before returning to its customary position of third by the following year.

Turning to Punjab, Pakistan's most populous province, we see a large drop in overall inequality from its height of .99 in 1984-85 to a level consistently hovering around .79 for the following three years. Following the initial large drop in 1985-86, there does not appear to be any discernable trend upward or downward thereafter. When overall inequality in Punjab is decomposed along urban-rural lines, we again find that, after a substantial decline from 1984-85 to 1985-86, inter-urban/rural inequality in Punjab is of only minor significance. By 1987-88, only 2 percent of national expenditure could be saved by eliminating it entirely with social indifference.

A similar pattern is evidenced in Sindh, Pakistan's second most populous and its most urbanised province. From a high of .98 in 1984-85, the index of overall inequality drifts above and below .77 over the remaining three years, with no clear evidence of trend. Once again, inequality within urban areas and within rural areas is much more pronounced than inequality between urban areas and rural areas generally.

In Balochistan, the relatively large decline in overall inequality observed in Punjab and Sindh in 1985-86 does not occur until 1986-87. As in those other two provinces, this seems largely to be explained by a corresponding drop in intra-urban/rural inequality at that time. In 1984-85, inter-urban/rural inequality was high– .40 –the highest that index reaches in any province in any of the four years examined. Two very large declines are in evidence, however, in 1985-86 and in 1987-88, so that by the end of the study period, inter-urban/rural inequality reaches .003 –the lowest value recorded for any province in any year. Again the conclusion suggested is that by 1987-88, inequality within urban areas and within rural areas of Balochistan was still high, and much more significant than inequality between urban areas and rural areas.

The NWFP is Pakistan's least populous province. Overall inequality measured there is consistently lower than in any of the other three provinces. Where overall inequality in the other provinces exceeded .95 in 1984-85, in NWFP. It reached only .66. By 1987-88, however the gap between NWFP and the other provinces had narrowed considerably. In 1987-88, index values in the other three provinces averaged .76, while the index for NWFP was .71. The trend as well as the levels in overall inequality in NWFP is also noticeably different. In each of the three other provinces, a large discreet decline in overall inequality occurs some-

where early in the period, to be followed by a flat or generally downward trend. In the NWFP, there is no such discreet change and, moreover, the general trend from 1984-85 to 1987-88 is upward, not downward. When overall inequality in NWFP is decomposed along urban/rural lines, we see again that inter-urban/rural inequality is minor in NWFP compared to intra-urban/rural inequality. While still only .08 by 1987-88, the trend in inter-urban/rural inequality in NWFP over the four year period was, however, generally upward.

For a closer look at urban and rural inequality in NWFP, Table 2 presents the results of computing the Islamic index of (overall) inequality for urban and rural sectors of NWFP separately. There we see a generally downward trend in urban inequality in NWFP from 1984-85 to 1987-88. There seems, however, to be some evidence of a generally upward trend in rural inequality over the same four years. That trend is neither clear or pronounced. Nonetheless, the size of the increase in rural inequality from .62 in 1986-87 to .70 in 1987-88 is worrisome and perhaps suggestive of a tendency towards increasing rural, relative to urban, inequality in NWFP in the future.

Table 2

Urban and Rural Inequality in NWFP

Year	Urban	Rural
1984-85	0.72487	0.65557
1985-86	0.68607	0.67434
1986-87	0.62225	0.62061
1987-88	0.62066	0.70300

5. CONCLUSION

This paper has examined the problem of income inequality in Pakistan from an Islamic point of view. Building on a suggestion by Naqvi (1981), the Islamic perspective on income distribution was formalised by adopting a Rawlsian social evaluation function for comparing alternative income distributions. From this, a cardinally significant Atkinson-Kolm-Sen ethical relative index of inequality was constructed and computed for Pakistan and each of its four provinces separately from the full *HIES* data series for 1984-85, 1985-86, 1986-87, and 1987-88. By exploiting a decomposition technique of Blackorby, Donaldson and Auersperg (1984), overall inequality in Pakistan was decomposed into its intra-province and inter-province components. Overall inequality in Pakistan, and in each of its four provinces separately, was similarly decomposed into intra-urban/rural and inter-urban/rural components.

The results obtained in this study demonstrate that, from an Islamic perspective, there are extreme inequities in the distribution of income within Pakistan and

its provinces. Given the great importance accorded to principles of economic equality and justice in Islam, the results reported here can help to motivate and guide the development of appropriate policies on the distribution of income as Pakistan proceeds through the process of "Islamising" its economy.

On a national level, the considerable decline in inter-province inequality within Pakistan over the recent four years of this study suggests strongly that there is little need or justification for "prioritising" among the four individual provinces in designing such policies. In the early years of this study, inter-province inequality was significant and may well, at that time, have justified relatively greater efforts at eradication of inequality within Pakistan's two most populous provinces, Punjab and Sindh. However, by 1986-87 and 1987-88 that picture had changed dramatically. The significant decline in inter-province inequality that occurred between 1984–85 and 1987–88 suggests that there now exists little compelling reason to channel a disproportionately larger share of resources and effort toward the two larger provinces to the disadvantage of the two smaller ones. The concurrent and general decline in urban/rural disparities on a national level points in a similar direction, as concerns the allocation of resources directed at the problems of urban and rural inequality. The evidence in both cases suggests that the effort required is one that should be balanced and fairly uniform across both provincial boundaries and urban and rural sectors.

While the data show a substantial and encouraging decline in overall inequality at the national level over the four years studied, the inequality still remaining is substantial. Even by 1987-88, a full 79 percent of total national expenditure by adult equivalents could have been saved – with no loss in social welfare – through income equalisation. This, of course, is likely to be no more than a lower bound on the true potential gains to be had when differences between the distribution of income and that of expenditure, along with likely under-sampling of the "tails" in the true distribution, are taken into account.

In Punjab, Sindh, and Balochistan, similar patterns and similar conclusions emerge. Within each of these provinces, urban/rural disparities declined significantly from 1984-85 to 1987-88, along with overall inequality in each province. However, 1987-88 overall index values ranging from .79 in Punjab, to .72 in Balochistan, suggest the level of income inequality in these three provinces still remains high. As at the national level, the evidence suggests that efforts intended to redress this inequality should be broad-based and balanced across urban and rural sectors within each of these three provinces.

Evidence from the NWFP presents a slightly different picture, and may call for slightly different policy orientation within that province. While overall inequality within NWFP was consistently the lowest among the four provinces of Pakistan over the four years of this study, the trends over time are noticeably different.

Overall inequality in NWFP generally increased over the four years, while inequality in the other three provinces decreased. Moreover, inequality between urban and rural sectors in NWFP seems generally to have been on the rise, ending the period in 1987-88 at a level (.08) second only to that in Sindh at the time (.10). As efforts proceeds to address the problem of inequality in NWFP, these data suggest that greater relative attention to the problem of rural inequality may be justified, as compared to the effort directed at inequality in the urban areas of NWFP.

Appendix

Throughout the text, the focus was exclusively on a special case of AKS relative indices of inequality. AKS indices measure the percentage of total income that can be saved by moving from the actual distribution to one of complete equality with social indifference. One may, however, prefer to consider *per-capita* indices of inequality. The per-capita index is given by

$$A(Y) = \mu(Y) - y_e, \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \qquad (A-1)$$

where $A(Y)$ is the index, $\mu(Y)$ is the mean of the distribution Y, and y_e is the equally distributed income for the distribution Y under some social evaluation function $W(Y)$. $A(Y)$ is the *per-capita* saving which could be achieved if income were distributed equally with no change in the level of social welfare.

Under certain circumstances, per-capita indices are *absolute* indices of inequality. Absolute indices depend on absolute income differences only, and so have the property that

$$A(Y + \alpha e) = A(Y),$$

for all income vectors Y and scaler's α, where e is a vector of ones. In words, absolute indices must be invariant to equal absolute increases (or decreases) in every person's income. Blackorby and Donaldson (1980) show that per-capita indices have this property if and only if the underlying social evaluation function, $W(Y)$, is *translatable* in the sense that

$$W(Y + \alpha e) = W(Y) + \alpha.$$

It was argued in the text that the Rawlsian social evaluation function (7) was an appropriate formalisation of the Islamic perspective on income distribution. It is easy to verify that (7) is homothetic – allowing us to create the relative index (8) used in the text. However, we may prefer to create a per-capita index, such as (A–1), instead. Since (7) is translatable, as well as homothetic, its corresponding

per-capita index (A – 1) will be an absolute index of inequality. In this case, the per-capita Islamic index of inequality will be the absolute index,

$$A(Y) = \mu(Y) - \min_i \{y_i\}. \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (A-2)$$

The index (A – 2) is both normatively and cardinally significant, but it need not lie between zero and one. It will measure the *per-capita* saving that can be achieved by redistributing income equally with no change is social welfare. It, too, can be *decomposed*, to isolate inter-group and intra-group components of overall inequality is ways similar to those discussed in the text. The intra-group index, $A_A(Y)$, will measure the income per-capita which can be saved in moving from income vector (a) to vector (b) in (4). The inter-group index, $A_R(Y)$, measures the income saved in moving from vector (b) to vector (c) in (4). It can be shown that overall per-capita inequality, $A(Y)$, can be expressed as the *sum* of intra-group and inter-group inequality,

$$A(Y) = A_A(Y) + A_R(Y), \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (A-3)$$

giving us a simple linear aggregation rule [Blackorby, Donaldson and Auersperg (1984)]. It is then quite straightforward to derive the percentage share of overall per-capita inequality arising from the intra-group and inter-group components by simply dividing both sides of (A–3) by $A(Y)$.

Without elaboration, we provide in Table A-1, below, values of the per-capita absolute index of inequality (A–2) computed for Pakistan and its four provinces from the full *HIES* data sets for the years 1984-85, 1985-86, 1986-87, and 1987-88, using the singe-earner adult equivalent as the basic statistical unit, as in the text. Overall inequality in Pakistan is decomposed into intra-province and inter-province components, as well as intra-urban/rural and inter-urban/rural components along the lines described above. Overall inequality in each province is decomposed into intra-urban/rural and inter-urban/rural components, as well. The percentage share of overall inequality in each category accounted for by inequality within and between the respective subgroups, is also provided.

Table A-1

Islamic Absolute Indices of Inequality for Pakistan and its Provinces

(A) Decomposition of per-Capita Inequality by Province Subgroups

	Year	Overall	(%)	Intra	(%)	Inter	(%)
Pakistan							
	1984-85	320.70	(100)	313.77	(98)	6.93	(2)
	1985-86	312.42	(100)	264.65	(85)	47.77	(15)
	1986-87	299.81	(100)	291.26	(97)	8.55	(3)
	1987-88	313.17	(100)	304.94	(97)	8.23	(3)

(B) Decomposition of per-Capita Inequality by Urban-Rural Subgroups

	Year	Overall	(%)	Intra	(%)	Inter	(%)
Pakistan							
	1984-85	320.69	(100)	319.45	(100)	1.24	(0)
	1985-86	312.42	(100)	306.90	(98)	5.52	(2)
	1986-87	299.81	(100)	296.49	(99)	3.32	(1)
	1987-88	313.17	(100)	311.18	(99)	1.99	(1)
Punjab							
	1984-85	305.51	(100)	304.34	(100)	1.17	(0)
	1985-86	260.05	(100)	258.83	(100)	1.22	(0)
	1986-87	284.58	(100)	281.47	(99)	3.11	(1)
	1987-88	303.40	(100)	301.58	(99)	1.82	(1)
Sindh							
	1984-85	360.05	(100)	358.09	(99)	1.96	(1)
	1985-86	287.81	(100)	281.16	(98)	6.65	(2)
	1986-87	333.12	(100)	324.33	(97)	8.79	(3)
	1987-88	332.78	(100)	321.39	(97)	11.39	(3)
Balochistan							
	1984-85	318.33	(100)	308.59	(97)	9.74	(3)
	1985-86	256.58	(100)	253.93	(99)	2.65	(1)
	1986-87	266.37	(100)	251.14	(94)	15.23	(6)
	1987-88	275.62	(100)	275.29	(100)	0.33	(0)
NWFP							
	1984-85	205.01	(100)	204.97	(100)	0.04	(0)
	1985-86	224.85	(100)	220.21	(98)	4.64	(2)
	1986-87	224.07	(100)	221.22	(99)	2.85	(1)
	1987-88	272.50	(100)	263.13	(97)	9.37	(3)

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