INCOME INEQUALITY IN ASIA, 1960-1985:
A DECOMPOSITION ANALYSIS

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1 Introduction

The economic development of Asia has been a focal point of interest of many research undertakings. The economic gains achieved by the rapidly growing economies of Japan, Korea and Singapore have been repeatedly analysed and investigated in the literature. At the same time, it is well-known that countries like India, Pakistan and Bangladesh have grown only at relatively very slow rates and have thus remained poor. This increasing economic diversity of the countries in Asia has raised concerns for the general welfare of the Asian people of today. Specifically, the uneven development of the economies therein is believed to have widened the 'gap between the rich and the poor' in the region over time.

Evidence on the historical trend of income inequality in Asia is scattered and efforts to synthesise them to derive some indication of the overall trend of inequality are few and far between. Intercountry inequality in Asia has been investigated by Bourguignon, Berry and Morrison (1983) and Theil (1989) but only as part of a larger study on world inequality. Even as these covered different (but overlapping) time periods, their findings suggested a worsening of Asian inequality over time. Theil further inferred that the increase in Asia's level of inequality was largely accounted for by the increasing disparity between subregions rather than within them\(^1\).

In their estimation procedures, both Bourguignon et al. and Theil used per capita incomes to represent the income of every individual in each country. This per capita approach to the measurement of inequality is however known to create a bias against the poorer countries owing to their high population growth rates and correspondingly younger populations. In addition, it also implied that income is equally distributed within countries – even as this is seldom, if at all, true. For these reasons, the results regarding the levels and trends of inequality in Asia derived from these two studies may need further qualification.

Complementarily, there are a number of studies that have investigated inequality within particular countries in Asia. These include those by Mangahas (1975) on the Philippines, Fei, Ranis and Kuo (1978) on Taiwan. Fields (1980) on India.\(^1\)

\(^{1}\)Theil decomposed Asia only into two regions, namely, India and non-India.
Anand (1983) on Malaysia, Islam and Khan (1986) on Indonesia, and Glewwe (1986) on Sri Lanka. The evidence compiled showed that inequality tended to increase in Bangladesh, the Philippines, Thailand, Malaysia and possibly Indonesia while decreasing inequality were observed for Japan, Korea, Taiwan, Hong Kong, Singapore and Pakistan. No clear patterns were observed for India and Sri Lanka while the problem in the Middle Eastern countries have yet to be systematically analysed. These studies proved valuable in characterising the problem within the various countries but the results are not directly comparable largely because of the differences in prices across nations. Hence, they are not very useful for assessing the well-being of an individual in, say, India relative to that of another in, say, Korea.

There is clearly a need to further investigate the problem of inequality in the Asian region and this study aims to address that need. In more detailed fashion, this study seeks to measure and trace the development of inequality in the region between 1960 and 1985. The use of internationally comparable data from Summers and Heston (1991) will minimise problems relating to the comparability of incomes across countries. Adult equivalent scales will also be employed to test the reliability of the per capita income approach to the estimation of inequality across countries while the decomposition analysis included is expected to provide a deeper insight into the problem and how it affected Asia in the 25 years covered. Concomitantly, this study aims to investigate the inequality problem in Asia from a within-country perspective. Inequality is measured and likewise decomposed using income distribution data from Jain (1975) and van Ginneken and Park (1984) and a comparative analysis is conducted.

Outline of the Paper
Section 2 of this paper presents the inequality measure applied and outlines the decomposition procedure used in the analyses. This is briefly followed by a discussion of the various sources of data in Section 3. Section 4 presents the results of the estimation and decomposition. And a final section summarises the findings and concludes the paper.
Measurement and Decomposition Procedures

Conflicting results displayed by conventional inequality measures have, at one stage, been a major source of dissatisfaction among practitioners in the field of income inequality. Of late, however, there seems to be a growing realisation that there is no single best measure of inequality as they all convey different information about the underlying income graduation. But as Sen (1973) and Cowell (1977) have shown, it is possible to impose some minimal requirements which an acceptable measure of inequality must satisfy. These requirements are presented below in the form of desirable properties that provide a basic framework for the choice of this study's inequality measure. They are (1) mean-independence, (2) population-size independence, (3) Pigou-Dalton transfer sensitivity, and (4) decomposability.

Mean-independence holds if, when all incomes are increased (decreased) by the same proportion, the inequality measure remains unchanged. Population-size independence holds if inequality remains unaffected if a proportionate number of persons are added/subtracted at all income levels. Pigou-Dalton transfer sensitivity holds if an income transfer from a wealthier person to a poorer person that does not make the latter wealthier than the former brings about a decrease in the measure of inequality. Decomposability holds if the inequality for the total population can be expressed as a weighted sum of the same measure for different population subgroups. Decomposition in this sense can either be strong (when population shares are used as weights) or weak (when income shares are used as weights). Moreover, some inequality measures can also be decomposed by sources of income. The decomposability property of inequality measures can be useful in analysing the contribution of each population group or income factor to aggregate inequality.

Given the criteria outlined above, Theil's second entropy measure was chosen for measurement and decomposition in this study. This measure, denoted by \( L \) below, satisfies all the properties set above and is highly desirable because it is strongly decomposable. Indeed, Bourguignon (1979) has argued that it is the only population-weighted, additively decomposable inequality measure that satisfies the Pigou-Dalton
condition and has the property of zero-homogeneity. \( L \) has been used in several studies including Theil (1979 and 1989), van Ginneken (1980) and Mishra and Parikh (1992). As an added advantage, the use of \( L \) in this study will facilitate the comparison of results with those Theil obtained for Asia in 1989.

The Theil Index of Inequality

In 1967, Henri Theil proposed two inequality measures based on the notion of entropy in information theory. One of these measures was of the form,

\[
I = \sum_{i=1}^{n} p_i \log \frac{p_i}{y_i}
\]

where \( n \) is the number of individuals, \( p_i \) refers to the population share of individual \( i \) (which, in this case, will just be \( 1/n \)), and \( y_i \) is the income share of individual \( i \). This measure can be applied to the per capita incomes of countries to obtain an overall measure of inequality. A measure of international inequality, \( L \), is thus given by

\[
L = \sum_{j=1}^{m} p_j \log \frac{p_j}{y_j}
\]

where \( m \) refers to the number of countries while \( p_j \) and \( y_j \) refer to the population and income shares, respectively, of country \( j \).

Decomposition by Population Subgroups

If the countries are grouped in various regions, say \( R_1, R_2, ..., R_G \), so that each country is in exactly one region, the measure \( L \) can be decomposed into

\[
L = L_B + L_W
\]

where

\[
L_B = \sum_{g=1}^{G} p_g \log \frac{p_g}{Y_g}
\]

refers to the inequality between regions,

\[
L_W = \sum_{g=1}^{G} P_g L_g
\]

refers to the (popn-weighted) inequality within regions,

\[
P_g = \sum_{j \in R_g} p_j
\]

refers to the population share of region \( R_g \),
3 DATA

\[ Y_j = \sum_{j \in R_g} y_j \] refers to the income share of region \( R_g \), and.

\[ L_g = \sum_{j \in R_g} \frac{p_j}{P_g} \log \left( \frac{y_j}{Y_g} \right) \] refers to the inequality between countries.

The application of \( L \) to per capita incomes of countries will result in measures that reflect inequality due to the differential growth rates of the countries involved. The resulting measures do not consider the level of inequality existing within the said countries.

To correct for this, the measure \( L \) can also be applied to income data referring to the quantile distribution of national incomes. \( L \) can thus be similarly defined as

\[ L = \sum_{j,k} p_{jk} \log \frac{p_{jk}}{y_{jk}} \]

where \( p_{jk} \) and \( y_{jk} \) refers to the population and income shares, respectively, of the \( k^{th} \) quantile of the \( j^{th} \) country. Even if it is assumed here that the income in each quantile is evenly distributed among the individuals therein, the application of Theil's measure in this manner will result in indices that reflect, to a certain extent, the degree of income inequality within each country. As such, this procedure is expected to provide a more realistic view of the problem.

3 Data

For this study, the term Asian region covers 23 countries which have been grouped into four major subregions - the East, the South East, the South West and the Middle East. The East consists of only two countries, Japan and South Korea. The South consists of seven countries namely Hong Kong, Taiwan, Singapore, Indonesia, Malaysia, Philippines and Thailand. The South West consists of six countries in the Indian sub-continent and these are India, Bangladesh, Nepal, Myanmar, Pakistan and Sri Lanka. Lastly, the Middle East consists of eight countries namely Afghanistan, Iran, Iraq, Israel, Jordan, Kuwait, Saudi Arabia and Syria.

There are only two basic variables required to use the index \( L \) in the measurement of inequality: income shares and population shares. And in this study three different
sets of these variables have been used. The first set consists of per capita income values estimated using purchasing power parities by Summers and Heston (1991) and population estimates obtained from the United Nations Demographic Yearbook. The second set has been derived from the same sources as the first but using an adult equivalent scale that assigned weights of 1.0 to an adult male, .70 to an adult female and .50 to children (age 0-14)\(^2\). The resulting figures will refer to two sets of \(L\) estimates for the benchmark years 1960, 1965, 1970, 1975, 1980 and 1985. Meanwhile, the third set of population and income shares used in the estimation were derived from data that referred to the quantile distribution of incomes for year 1975. For this, the main sources are the compilations of national income distributions by Jain (1975) and van Ginneken and Park (1984)\(^3\). Results from Grosh and Nafziger (1986) which provided distributions for particular country (economic) groups were also used for the eight other countries for which Jain and van Ginneken and Park had no data\(^4\). As these data sets draw on disparate sources, they contain some internal incompatibilities. Results should therefore be interpreted with caution.

4 Empirical Results

Table 1 shows the population size/shares and per capita income levels of Asia and its various subregions at five-year intervals. It is seen that the region's total population increased by almost 80 percent between 1960 and 1985 while its per capita income has more than doubled over the same period. In 1960, the Middle East was the richest subregion followed by East Asia. At that time, South East Asia and South West Asia were the poorer subregions with per capita income levels that were below the regional average. Over time, the four subregional economies posted positive growths but the rates at which they grew differed markedly. Strongest performances were observed

\(^2\)This adult equivalence scale is an adaption of the scale used by the Organisation for Economic Cooperation and Development in their researches.

\(^3\)Jain (1975) was the source of data for Japan, South Korea, Hong Kong, Indonesia, Malaysia, Taiwan, Thailand, Pakistan, Sri Lanka and Israel while van Ginneken and Park (1984) was the source of data for Bangladesh, India, Iran, Nepal and the Philippines.

\(^4\)For this, Singapore was classified as middle income, Afghanistan and Myanmar as low income and the countries of Iraq, Jordan, Kuwait, Saudi Arabia and Syria as capital-surplus oil exporters.
<table>
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<td></td>
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</tr>
<tr>
<td>1960</td>
<td>(a)</td>
<td>915 164</td>
<td>1 037</td>
<td>12.99</td>
<td>2 331</td>
<td>18.81</td>
<td>955</td>
<td>62.75</td>
<td>636</td>
<td>5.45</td>
<td>2 860</td>
<td></td>
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<tr>
<td></td>
<td>(b)</td>
<td>643 783</td>
<td>1 474</td>
<td>13.46</td>
<td>3 196</td>
<td>18.37</td>
<td>1 390</td>
<td>62.64</td>
<td>906</td>
<td>5.53</td>
<td>4 010</td>
<td></td>
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<tr>
<td>1965</td>
<td>(a)</td>
<td>1 027 068</td>
<td>1 237</td>
<td>12.40</td>
<td>3 450</td>
<td>19.15</td>
<td>1 040</td>
<td>62.78</td>
<td>662</td>
<td>5.67</td>
<td>3 425</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(b)</td>
<td>718 361</td>
<td>1 768</td>
<td>13.13</td>
<td>4 655</td>
<td>18.18</td>
<td>1 566</td>
<td>63.00</td>
<td>944</td>
<td>5.69</td>
<td>4 887</td>
<td></td>
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<tr>
<td>1970</td>
<td>(a)</td>
<td>1 152 729</td>
<td>1 578</td>
<td>11.82</td>
<td>5 525</td>
<td>19.29</td>
<td>1 272</td>
<td>62.97</td>
<td>710</td>
<td>5.92</td>
<td>3 924</td>
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<tr>
<td></td>
<td>(b)</td>
<td>810 338</td>
<td>2 244</td>
<td>12.57</td>
<td>7 394</td>
<td>18.98</td>
<td>1 840</td>
<td>62.60</td>
<td>1 015</td>
<td>5.85</td>
<td>5 651</td>
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<tr>
<td>1975</td>
<td>(a)</td>
<td>1 297 091</td>
<td>1 906</td>
<td>11.35</td>
<td>6 545</td>
<td>19.43</td>
<td>1 589</td>
<td>63.04</td>
<td>676</td>
<td>6.18</td>
<td>5 305</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(b)</td>
<td>914 998</td>
<td>2 560</td>
<td>12.03</td>
<td>8 752</td>
<td>19.19</td>
<td>2 282</td>
<td>62.70</td>
<td>963</td>
<td>6.08</td>
<td>7 643</td>
<td></td>
</tr>
<tr>
<td>1980</td>
<td>(a)</td>
<td>1 452 787</td>
<td>2 038</td>
<td>10.66</td>
<td>7 995</td>
<td>19.50</td>
<td>2 123</td>
<td>63.35</td>
<td>692</td>
<td>6.49</td>
<td>5 128</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(b)</td>
<td>1 020 324</td>
<td>2 901</td>
<td>11.49</td>
<td>10 561</td>
<td>19.43</td>
<td>3 035</td>
<td>62.54</td>
<td>998</td>
<td>6.54</td>
<td>7 250</td>
<td></td>
</tr>
<tr>
<td>1985</td>
<td>(a)</td>
<td>1 619 625</td>
<td>2 153</td>
<td>9.99</td>
<td>9 024</td>
<td>19.45</td>
<td>2 387</td>
<td>63.68</td>
<td>786</td>
<td>6.88</td>
<td>4 175</td>
<td></td>
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<tr>
<td></td>
<td>(b)</td>
<td>1 152 743</td>
<td>3 025</td>
<td>10.74</td>
<td>11 795</td>
<td>19.37</td>
<td>3 369</td>
<td>63.10</td>
<td>1 114</td>
<td>6.79</td>
<td>5 937</td>
<td></td>
</tr>
</tbody>
</table>

Note: (a) Unadjusted population and income estimates from Summers and Heston (1991).
(b) Adjusted Data - Estimated using Real GDP per equivalent adult.

Scale: Adult Male = 1.00, Adult Female = 0.7 and Children (0-14) = 0.5
EMPIRICAL RESULTS

for East Asia and South East Asia where per capita incomes increased by 287 percent and 150 percent respectively. In comparison, the Middle East and South West Asia improved only marginally. In 1985 thus the rankings of the subregions were: (1) East Asia, (2) Middle East Asia, (3) South East Asia, and (4) South West Asia.

Table 1 also shows the reestimated population and income levels with the use of adult equivalence scales. The use of the scales has resulted in estimates of total population which were 30 percent less than the mere population headcount. Population shares by subregion, however, differed only slightly. With constant incomes and reduced population figures, national adult equivalent income levels have naturally increased by some 30 to 40 percent. However, the rates at which these have increased over time were noted to be not significantly different to the rates of increase observed for the unadjusted data. As a result, the trends earlier observed for the changes in population and income levels were maintained.

4.1 General Levels and Trends, 1960-1985

Table 2 summarises the results of the application of Theil's measure $L$ to Asia and its subregions. It is shown that income inequality in the region steadily worsened between 1960 and 1985 with $L$ increasing from 0.2 to 0.5. The level of inequality in each of the subregions all appear to have deteriorated as well. The highest level of inequality in 1960 of about 0.38 observed among countries in the Middle East while all the other subregions had inequality levels less than 0.10.

On the other hand, the least level of inequality in 1960 was observed among countries in the South Western subregion.

Through the years, the rates of inequality within the subregions evolved in different directions. In the Middle East, inequality fluctuated but showed an overall

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8 An inspection of the country statistics showed that the per capita income of countries in the Middle East varied widely: from as low as $775 (for Afghanistan) to an extremely high level of $93,534 (for Kuwait). If Kuwait was excluded from the group, the per capita incomes in the subregion would range only between $775 and $3,958 (for Israel). The extremely high per capita income level of Kuwait had undoubtedly raised income inequality in the subregion.

9 In contrast to the latter case, this low level of inequality can be explained by the fact that the per capita income levels of the countries in this subregion did not vary very much, ranging only between $482 (for Myanmar) to $1,377 (for Sri Lanka).
<table>
<thead>
<tr>
<th>Year</th>
<th>Theil Coefficients L</th>
<th>Decomposition Results</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Asia East Asia South</td>
<td>Asia subdivided into</td>
</tr>
<tr>
<td></td>
<td>Asia East Asia South</td>
<td>four subregions</td>
</tr>
<tr>
<td></td>
<td>Asia excluding East</td>
<td>L_B</td>
</tr>
<tr>
<td>1960 (a)</td>
<td>0.2120 0.0762 0.0480</td>
<td>0.1622</td>
</tr>
<tr>
<td>(b)</td>
<td>0.2075 0.0686 0.0484</td>
<td>0.1568</td>
</tr>
<tr>
<td>1965 (a)</td>
<td>0.3098 0.1163 0.0923</td>
<td>0.2404</td>
</tr>
<tr>
<td>(b)</td>
<td>0.2882 0.1013 0.0967</td>
<td>0.2341</td>
</tr>
<tr>
<td>1970 (a)</td>
<td>0.4165 0.1268 0.1028</td>
<td>0.3425</td>
</tr>
<tr>
<td>(b)</td>
<td>0.4026 0.1034 0.1085</td>
<td>0.3305</td>
</tr>
<tr>
<td>1975 (a)</td>
<td>0.4949 0.0981 0.0951</td>
<td>0.4315</td>
</tr>
<tr>
<td>(b)</td>
<td>0.4811 0.0821 0.0921</td>
<td>0.4204</td>
</tr>
<tr>
<td>1980 (a)</td>
<td>0.5447 0.0995 0.1067</td>
<td>0.4704</td>
</tr>
<tr>
<td>(b)</td>
<td>0.5233 0.0903 0.1013</td>
<td>0.4504</td>
</tr>
<tr>
<td>1985 (a)</td>
<td>0.5038 0.0825 0.1120</td>
<td>0.4334</td>
</tr>
<tr>
<td>(b)</td>
<td>0.4865 0.0749 0.1074</td>
<td>0.4178</td>
</tr>
</tbody>
</table>

(a) Estimated using Real GDP per capita values from Summers and Heston (1991)
(b) Estimated using Real GDP per equivalent adult derived using the scale:
    Adult Male = 1.0, Adult Female = 0.7 and Children (0-14) = 0.5.
decrease by the end of 1985. Notwithstanding, this subregion continued to rank 1st in having the worst inequality among all the subregions of Asia throughout the period. In East Asia and South West Asia, the level of inequality grew only very slightly while that in South East Asia increased substantially. For the latter case, the increase was steady and was such that at the end of the period it already ranked 2nd to the Middle East in terms of worst inequality.

Decomposition Results

There are three levels at which decomposition was attempted. First was the subdivision of Asia into its four geographical subregions (i.e. East Asia, South East Asia, South West Asia and Middle East Asia). Second was the subdivision of Asia due to economic considerations for which we have two subregions: East Asia and non-East Asia. The third subdivision of Asia was made due to demographic considerations. For this, we likewise have two subregions: a heavily populated South West Asia and the rest of the Asia (hereon referred to as the non-South West Asia).

Table 2 presents the results of the decomposition for each of the levels attempted.

For the case where Asia is subdivided into its four geographical subregions, it is seen that a major component of the increased level of total inequality is \( L_B \), the inequality existing between subregions. In 1960, this component accounted for a large majority (about 75 percent) of Asian inequality and this share had further increased by 10 percent by 1985. This implies a widening of income differences across the four subregions and lends support to the earlier conjecture that there is growing economic diversity among the countries in the region. The very low share of \( L_W \) (i.e. the inequality arising within the subregions) to aggregate inequality further implies that not much disparity in income levels was detected. This suggests a certain degree of homogeneity in the income levels of the countries within each subregion.

For the case where Asia is subdivided into East Asia and non-East Asia, the decomposition results tell a different story. In this case, \( L_B \) accounted for only a minor (though significant and increasing) share of total inequality. It is well-known

\footnote{As many of the countries in this subregion are highly dependent on their oil reserves for income, it is suspected that the fluctuations observed in the measures were largely influenced by the fluctuations in the prices of oil.}
that the countries in East Asia (i.e. Japan and Korea) are advancing at very rapid rates and this has, most likely, caused the increasing share of \( L_B \) over time. More importantly, the results show that \( L_W \) is a major factor of overall inequality. From the table, most of the \( L_W \) can be found in the non-East Asian subregion, within which is seen a rapid worsening of inequality levels over time.

The decomposition of inequality for the case where Asia was subdivided into South West Asia and the rest of the region also presents some interesting results. For this case, it is seen that over the years \( L_B \) had become a very dominant factor of total inequality increasing from 57 percent in 1960 to almost 75 percent in 1985. This implies a widening of the gaps between income levels of these two subregions. Specifically, it can be inferred that South West Asia has lagged behind the rest of Asia in terms of its income level. It is further noted that the level of inequality outside South West Asia is about ten times higher than that within it.

4.2 Results when Within-Country Inequalities are Considered, 1975

Theil’s coefficient estimates for 1975 for each country are presented in Table 3. The oil-rich Middle Eastern economies of Iraq, Jordan, Kuwait, Saudi Arabia and Syria are noted to have exhibited extremely high levels of inequality. Relatively high inequality rates were also observed for Iran, Nepal and Malaysia. At the other end of the
Table 3 Quantile Income Distributions and Estimated Theil Coefficients by Country (in percentages), 1975.

<table>
<thead>
<tr>
<th>Country</th>
<th>I</th>
<th>II</th>
<th>III</th>
<th>IV</th>
<th>V</th>
<th>VI</th>
<th>VII</th>
<th>VIII</th>
<th>IX</th>
<th>X</th>
<th>Theil Coefficient L</th>
</tr>
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<tbody>
<tr>
<td>Japan</td>
<td>3.4</td>
<td>5.4</td>
<td>6.3</td>
<td>7.2</td>
<td>8.3</td>
<td>9.2</td>
<td>10.5</td>
<td>12.1</td>
<td>14.5</td>
<td>23.1</td>
<td>1.1307</td>
</tr>
<tr>
<td>South Korea</td>
<td>4.2</td>
<td>5.7</td>
<td>6.5</td>
<td>7.3</td>
<td>8.2</td>
<td>9.1</td>
<td>10.2</td>
<td>11.6</td>
<td>13.1</td>
<td>23.3</td>
<td>1.1124</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>2.1</td>
<td>3.5</td>
<td>4.5</td>
<td>5.5</td>
<td>6.5</td>
<td>7.8</td>
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<td>11.7</td>
<td>15.3</td>
<td>33.7</td>
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<td>Indonesia</td>
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<td>4.1</td>
<td>4.9</td>
<td>5.6</td>
<td>6.3</td>
<td>7.1</td>
<td>8.0</td>
<td>9.3</td>
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<td>6.9</td>
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<td>3.2</td>
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Notes: (1) Other M.E. nations refer to Iraq, Jordan, Kuwaiit, Saudi Arabia and Syria.

Sources: (a) Jain (1975), Size Distribution of Income (World Bank).
(b) van Ginneken and Park (1984), Generating Internationally Comparable Income Distribution Estimates (International Labour Office).
Table 4. Theil Coefficients for Asia and Subregions, 1975
(considering within-country inequality)

<table>
<thead>
<tr>
<th>Regions, Subregions</th>
<th>L</th>
<th>L_B</th>
<th>L_W</th>
<th>L_B/L (%)</th>
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<td>43.72</td>
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<tr>
<td>non-East Asia</td>
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<td>0.3310</td>
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<td>55.64</td>
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<tr>
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<td>0.3513</td>
<td>0.4185</td>
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<tr>
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<td>0.2704</td>
<td>6.63</td>
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<td>0.2824</td>
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</table>
inequality scale, low levels of .16 or less were observed for Japan, Korea, Singapore, Taiwan and Pakistan.

The estimation results for Asia and its subregions are presented in Table 4. Inequality for the entire region was estimated at .77, a rate that is higher than the highest level observed for any single country. The Middle East again exhibited the greatest inequality level from among the four subregions. This level is observed to be more than twice the next highest which is the measure for South East Asia. In the rankings, South West Asia comes third while East Asia registered as the subregion with the least inequality.

The decomposition results showed that when Asia is subdivided into the four geographical subregions, total inequality is largely accounted for by the inequality arising between countries, $L_B$. In contrast, total inequality within each of the four subregions were mainly attributable to the inequality existing within the countries therein, $L_W$. For the case when Asia is subdivided between East Asia and non-East Asia, it is seen that there exists a high level of inequality outside East Asia while a low level is maintained within. The results of the decomposition indicated that total inequality in the region is mostly accounted for by $L_W$ rather than $L_B$. But within each of these subregions, inequality is accounted for by both components i.e. by the inequality arising between and within countries.

For the case where Asia is subdivided between South West Asia and non-South West Asia, the estimated inequality observed for each subregion diverged. Total inequality for the former was estimated at a low .29 while the estimate for the latter proved to be a high .64. From this perspective, much of the inequality in the region is experienced outside South West Asia. The decomposition results further showed that total inequality in Asia is accounted for by both $L_W$ and $L_B$. This also holds true when inequality outside South West Asia is decomposed. Interestingly, most of the (low) inequality in South West Asia is due to the inequality existing within the countries in the subregion.
5 Summary and Conclusion

The use of adult equivalent scales has resulted in estimates which were not significantly different to those obtained without them. Nevertheless, this result does not justify the use of per capita income as a measure of individual welfare. Differences in the age-sex composition of populations must always be considered in the representation of individual welfare. A clearer difference in the results may perhaps emerge if the age-sex composition of the populations compared were more diverse than they have been for the case of the countries in Asia.

In terms of technique, the results obtained using the per capita approach and the approach which employed data that referred to the decile distribution of national incomes summarised in Table 5 are compared. The measurement of inequality which considered the inequality levels existing within the countries involved did make a significant difference in the results compared to the method that used the per capita approach – it resulted in higher levels of inequality. In terms of decomposition, the shares of the within-subregion component of total inequality $L_W$ were increased substantially and the shares of the between-subregion component $L_B$ subsequently reduced by very large amounts when within-country inequalities are considered. In one particular case (the third case of decomposition), the conclusions affecting the dominance of the within- or the between-subgroup component of inequality even run contrary to each other. All these imply that the results using the per capita approach may not be entirely reliable as an indicator of the level of inequality at a particular timepoint. Its use may be limited to indicating the trend of inequality over a considerable period of time.

The results of the measurement of income inequality in Asia revealed that the level of inequality in the region has seriously deteriorated between 1960 and 1985. While income levels of individuals in certain countries have improved considerably, many others have remained well below average. The Middle East stands out as the subregion with the highest level of inequality while the South Western subregion appeared to have the lowest inequality rate. The countries in East Asia were shown

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Since the differences in the values of the estimates obtained for the unadjusted and adjusted data were small, only the results for the unadjusted data are presented and used here.
to have advanced well ahead of their other Asian neighbours. This subregion appears to maintain a good balance between a high rate of economic growth and a low level of inequality. The countries in South East Asia are seen to likewise achieve large economic gains but at the expense of a more egalitarian distribution of their national incomes.

The results of the study have clearly indicated that total inequality in Asia is a result of the diverging levels of incomes between countries and between subregions. However, it is also revealed that the level of inequality existing within countries and within subregions are, by and large, responsible for the deterioration of income inequality in the region. The evidence suggests that efforts must be exerted to reduce within-country levels particularly for the middle-income countries of South East Asia and the oil rich economies of the Middle East. The development paths of the high-income low-inequality nations of Japan, Korea, Israel and Singapore can serve as models of economic growth. Alternatively, the growth strategies of certain low- to middle-income low-inequality countries such as Pakistan and Sri Lanka may also be worth emulating.

<table>
<thead>
<tr>
<th>Table 5: Theil Coefficients for Asia and Subregions, 1975</th>
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<td>Region, Subregions, Subgroups, assumptions made in the estimation</td>
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<td>----------------------------------------------------------</td>
</tr>
<tr>
<td><strong>ASIA with 4 subregions</strong></td>
</tr>
<tr>
<td>zero inequality within countries</td>
</tr>
<tr>
<td>non-zero inequality within countries</td>
</tr>
<tr>
<td><strong>ASIA with 2 subregions</strong></td>
</tr>
<tr>
<td>(East Asia and non-East Asia)</td>
</tr>
<tr>
<td>zero inequality within countries</td>
</tr>
<tr>
<td>non-zero inequality within countries</td>
</tr>
<tr>
<td><strong>ASIA with 2 subregions</strong></td>
</tr>
<tr>
<td>(South West Asia and non-South West Asia)</td>
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<tr>
<td>zero inequality within countries</td>
</tr>
<tr>
<td>non-zero inequality within countries</td>
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Bibliography


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