Income Distribution, Overurbanization and Economic Development: Evidence From A Cross-National Study*

Farhad Dehghan**

The main hypothesis to be tested in this paper is that, the greater the extent of overurbanization, the greater the inequality of income. International comparable data are utilized to test the above stated hypothesis for the three sub-samples in our data. We did not find a significant positive correlation between overurbanization and income inequality for any of our LDC's sub-samples. Surprisingly, we found the relationship to be robust and negative for the developed countries. In the second part of the paper we tested the hypothesis that urbanization and income equality are the two important variants of development and welfare. These relationships were found to be robust for both low and medium income developing countries. The relationship between the GDP/CAP and the Gini coefficient was found to be significantly positive for the low income countries, and significantly negative for the high income developing countries.

I. Introduction

Explosive urban growth combined with growing poverty and stagnation in the less developed countries (LDCs), has renewed interest in investigating the costs and benefits of urbanization.

The purpose of this paper is two fold. The main purpose of this study is to investigate the relationship between overurbanization and income inequality. The second purpose of the paper is to study the effects of urbanization and income inequality on economic development.

* This research was supported by a grant from the University of Wisconsin-Platteville. An earlier version of this paper was presented at the fifty-fifth annual meeting of the Midwest Economic Association, St. Louis, Missouri, 1991.
** Department of Economics, University of Wisconsin, Platteville, Wisconsin, U.S.A.
The United Nations projects that:

The level of urbanization for the world as a whole is expected to increase to 51 percent in 2000 and 65 percent in 2025. The corresponding figures for the less developed regions are 45 percent in 2000 and 61 percent in 2025. The more developed regions are projected to be 75 percent urban in 2000 and 83 percent in 2025. It is also projected that the less developed regions will comprise 70 percent of the world’s urban population by 2000 and 80 percent by 2025.\(^1\)

Many researchers argue that the dramatic growth of urbanization in many less developed countries (LDCs) is “Unbalanced,” i.e., that the growth rate of urbanization has been higher than the growth rate of the GNP. Those countries which have a higher than average level of urbanization relative to their level of economic development are said to be economically dysfunctional and are labeled as being “overurbanized.”\(^2\)

According to this recently reconceptualized overurbanization theory, excessive urbanization results from the migration from the low income, slow growing, traditional sectors to the higher income, faster growing, modern sectors of the economy. Migrants move to larger towns, where there are greater opportunities for employment. With few qualifications and skills, they are ready either to accept poorly paid jobs in service sectors or find employment in marginal jobs such as street vending and low-paying tertiary sectors. Hence, there is an automatic increase in wage disparities between high-paying manufacturing occupations and low-paying tertiary jobs. Furthermore, the migrating flow exacerbates the urban unemployment problem; and, it is the volume of unemploy-ment in the urban areas which is partly to blame for the inequality of income.

Therefore, based on the above observations there are strong reasons for believing that excessive urbanization has an important on income inequality by affecting both the income differentials between the traditional and modern sectors, and the inequality within the modern sector.

Some researchers (such as Lipton, 1977, 1984; Gugler, 1982; Richardson, 1977) believe that overurbanization affects some income groups more than it does others, imposing an especially heavy burden on the shoulders of rural households.\(^3\) They believe that biases in the

\(^{3}\) Richardson (1977), argues that many of the social costs of urbanization (i.e., congestion and pollution) are caused by the rich and paid by the poor within a city.
fiscal system extract surplus from rural households to finance urban infrastructure and thereby worsen income distribution. These analysts argue that the urban bias in the fiscal system produces overurbanization. Gugler (1982) in drawing a relationship between urban bias and growing poverty in LDCs contends that "the urban elite funnel an inordinate share of the resources of their societies into large cities, which have become centers of power and privilege." Gugler (1982) believes that the urban concentration of financial and human resources have resulted in widening the income gap between the rich and the poor and will inhibit aggregate economic output of overurbanized LDCs. Timberlake and Kentor (1983), concurred with this proposition and claimed that "relative increases in overurbanization are consistently accompanied by relative declines in per capita economic growth."

Another group of scholars of comparative urban research have shifted the attention to dependency/world system paradigm to examine these issues. The "new urban sociology" as it is called (Walton, 1981), analyzes the growing urbanization/stagnation problem of the LDCs in the context of international political economy. Scholars such as Castells (1977), Kentor (1981), Walton (1982), Chase-Dunn (1984), and Timberlake (1985, 1987) viewed the penetration of foreign capital by the core countries and dependency of the LDCs on the developed countries (DCs) as the primary cause of stagnation in the LDCs. Timberlake and Kentor (1983), Smith (1987), Bradshow (1985) and London and Smith (1988) have extended this argument and have concluded that the dependency on foreign capital in the LDCs is the major cause of overurbanization.

Recent work in this area has tested the theory of a direct linkage between urban concentration and rural/urban inequality (see Stewart and Lee, 1986; Mutlu, 1989). The authors of these studies have attempted to explain urban concentration as a function of inequality. Others have tested the thesis that the rapidly growing urban population and excessive employment in service occupations (relative to manufacturing occupations) lowers productivity and economic growth.  

4 See Lipton (1979) and Cohen (1979).
5 McLure (1975) conducted a study for Colombia and concluded that rural households, and especially the rural poor, are disadvantaged relative to urban households in terms of the net impact of public tax and expenditure policies.
6 See Stewart and Lee (1986). They have examined 51 LDCs and found a significant positive correlation between urban concentration and urban/rural per capita income ratio, particularly for countries with lower per capita incomes and larger shares of employment in the primary sectors.
7 See, e.g., Bienen; Gugler; Rondinelli; Todaro (n. 2 above); also Frank and Webb (1977).
Despite all of this research, scholars of comparative urbanization have not explicitly studied the impact of overurbanization on income inequality. Whatever statistical evidence there is on this subject is fragmentary. This paper focuses on this neglected aspect of the literature.

We have formulated the following two hypothesis for our paper: Hypotheses I. Overurbanization has a deleterious effect on income distribution. Hypotheses II. Urbanization and income equality are the two important determinants of economic development.

We will pursue our investigation by: (a) using internationally comparable data for gross domestic product (GDP) per capita and Gini Coefficient, (b) operationalizing overurbanization by using the residual estimates, and (c) comparing the estimates for different economic levels in three sub-samples and for two separate years (1970 and 1980).

In Part II of this paper, we will present our model, its specifications, and discuss our data. In part III, we will present our empirical results; and, part IV of this paper is reserved for summary and conclusions.

II. The Model and Measurements

To investigate the impact of overurbanization on income inequality, three structural equations are nested into our general model in the following forms:

(1) \[ G = a_0 + a_1 \ln y + U_1 \]
(2) \[ \text{Urb} = b_0 + b_1 \ln y + U_2 \]
(3) \[ U_1 = c_0 + c_1 U_2 + U_3 \]

Where: \( G = \) Gini ratio, expressing the average degree of income inequality across the entire income scale,

\[ y = \text{Gross Domestic Product (GDP) per capita. As it is accepted almost universally, income terms are in logarithmic forms,} \]

\[ U_1 = \text{Stochastic error terms (residuals) assumed to be} \ U_1 \sim (0, \sigma_1^2), \]

\[ U_2 = \text{Stochastic error terms (residuals) assumed to be} \ U_2 \sim (0, \sigma_2^2), \]
\[ U_3 = \text{Stochastic error terms (residuals) assumed to be} \]
\[ U_3 \sim (\mu, \sigma_3^2) \, , \]

\[ \text{Urb} = \text{Urban population as percentage of total population.} \]

Equation (1) is designed to explain measures of inequality as a function of GDP per capita.\(^8\) We operationalize inequality by estimating \( U_1 \) (residuals) from this model.\(^9\) Countries with positive residuals \((U_1 > 0)\) would have a higher level of inequality than expected, while countries with negative residuals \((U_1 < 0)\) would have a lower level of inequality than expected (the higher the Gini ratio the higher is the inequality).

We operationalize "overurbanization" by taking \( U_2 \) from equation (2). If \( U_2 > 0 \), then actual level of urbanization is greater than the expected level of urbanization and if \( U_2 < 0 \), then actual level of urbanization is less than the expected level of urbanization. The overurbanization variable, \( U_2 \), is preferred to the measurement of relative urbanization (ratio of urbanization level to GDP). Although the relative urbanization variable has some merits, it is not the best proxy variable for overurbanization (see Bradshaw, 1987).\(^10\) The residual \( U_2 \) has the advantage of capturing the notion of relative urbanization and remaining orthogonal to GDP per capita at the same time.

Equation (3), is the main instrument to test the impact of overurbanization on income inequality. The hypothesis to be tested is that the greater the extent of overurbanization, the greater the inequality of income. If overurbanization increases income inequality, those countries with a large positive residual \((U_2)\) in equation (2) should have corresponding increases in their residual estimates \((U_1)\) from equation (1). In other words, if overurbanizational is positively related to income inequality, in equation (3) we would expect to find a significant positive coefficient \((c_1)\) for our predicted model.

\(^8\) We have used the natural logarithm (lny) to transfer the data from one scale to another.

\(^9\) Measures of inequality (in this case the Gini ratio) is also explained in terms of several other variables, but for the specific purpose of this study and maintaining symmetry with equation (2), it suffices to include GDP per capita only in its linear form.

\(^10\) Bradshaw (1987), argues that "The concept of relative urbanization requires a measure that will directly assess whether a nation has a larger (or smaller) urban population than would be expected by its level of economic development. In addition to this theoretical and conceptual concern, two recent cross-national tests point out that this ratio variable (percent Urban/GNP per capita) may distort some regression coefficients in studies that test the effect of relative urbanization on economic development. More specifically, the regression of GNP per capita on this ratio might distort the effect of relative urbanization." For a debate on this issue see, for example, Long (1980), Firebaugh and Gibbs (1985) and Bradshaw and Radbill (1987).
The Data and Measurement

It is important for any cross-national study to select carefully from among the available pool of data, those countries which are going to be included in the data set. In order to minimize the sampling errors, we have attempted to include the largest possible sample. Our data base included 64 independent nations representing all continents.\(^{11}\)

The issue of "overurbanization" is not relevant to developed countries. A developed country should (at least theoretically) possess the resources to support a large urban population. In recognition of this fact we have divided our data set into countries at different levels of development, with a particular attention given to the developing economies.

Those countries with GDP/CAP of less than $1000 in 1979 are grouped as low income countries, those with GDP/Cap between $1000 and $3000 are classified as medium income countries and those with GDP/CAP above $3000 are grouped in the high income category. The partitioning of our data followed World Bank divisions of developed and low and medium income developing countries. A country must be an independent nation-state and not a city-state in order to be included in our data set; thus, city-states such as Hong Kong and Singapore were not included in our sample. We omitted no country because of its size (for an example, see Delacroix and Ragin, 1981).

We must compare the identical list of countries that have the complete data on all variables for 1970 and 1980. This would impose a limit in terms of data availability.

We take data on GDP per capita from Summer & Heston (1984). These are in terms of international comparable dollars, which represent a significant improvement over the conventional measures of GDP per capita.\(^{12}\)

---

\(^{11}\) Countries that are included in our data set are the following: Argentina, Austria, Bangladesh, Barbados, Bolivia, Botswana, Brazil, Canada, Chile, Columbia, Costa Rica, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Finland, France, Gabon, Germany (Fed.), Guatemala, Honduras, Hungary, India, Indonesia, Iran, Iraq, Israel, Italy, Ivory Coast, Japan, Kenya, Korea, S, Malaysia, Mauritius, Mexico, Netherlands, New Zealand, Nicaragua, Norway, Pakistan, Panama, Peru, Philippines, Portugal, Senegal, Sierra Leone, Spain, Sri Lanka, Sudan, Sweden, Tanzania, Thailand, Trinidad-Tobago, Tunisia, Turkey, Uganda, United Kingdom, Uruguay, U.S.A., Yugoslavia, Zambia, and Zimbabwe.

The urbanizational variable used in this study is the urban population as a percent of total population. Alternative proxies of the urbanization variable used by other researchers are: (a) percentage of population living in cities of 100,000 or more, (b) percent of population living in cities of one million or more, (c) percent of population in cities of 20,000 or more.

All of the above definitions of urbanization are highly correlated with each other. Since each nation is better aware of their socio-economic conditions in their respective countries than anyone else, the national definition of urbanization is, therefore, best suited for this variable. Many scholars have acknowledged the problems related to diversity of definitions for each country and lack of consistency in population reporting and reached the conclusion that these problems should not preclude cross-national research on urbanization (see Rogers, 1982; Kelly and and Williamson, 1984; Bradshaw, 1985).

The best measure of income distribution is given by distribution of household income per head. Gini concentration ratio is preferred to other proxies for inequality because it would provide an average degree of income inequality across the entire income scale. The Gini coefficients are taken from Hoover (1989), Menard (1986) and Van Ginneken (1984) who have compiled comparable income distribution data for many countries of the world.

Hoover’s data is more comparable and accurate than other data available thus far. His data:

Takes into account not only the issues of time span, coverage, and income-receiving unit but also the definition and measurement of income, which is capable of producing the most distortion. For instance, inequality in LDCs can be vastly overestimated if income in-kind is omitted from consideration. Inequality is also overestimated in DCs whenever tax statistics are used as a source of data.

Previous research was under the assumption that changes in income distribution take place slowly and the Gini ratios are comparable within 20 years time span. (See Ahluwalia, 1976; Bollen and Jackman, 1985; Paukert, 1973). This is a debatable assumption in the literature. In this paper we have made a conservative assumption that the Gini concentra-

---

14 See Pandey (1977). He found a coefficient of determination of .98 between percent of population in cities of 20,000 or more and percent of urban population or a percent of total population.
tion ratios are reasonably comparable within the span of 10 years (1970-80).

III. Empirical Results

Table 1 shows the OLS estimates of equation (1) for our entire sample and the three sub-samples. GDP/CAP was included in this equation to serve as a control variable for the level of economic development. When the entire sample was considered, the coefficient of income (GDP/CAP) as well as the regression F-statistics were statistically

Table 1

<table>
<thead>
<tr>
<th>Sample Size</th>
<th>Dependent Variable</th>
<th>1970</th>
<th>1980</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>GDP per Capita (a1)</td>
<td>F</td>
<td>R²</td>
</tr>
<tr>
<td>Full Sample</td>
<td>Gini</td>
<td>-0.0373</td>
<td>8.05a</td>
</tr>
<tr>
<td>N = 64</td>
<td></td>
<td>(-2.84)a</td>
<td></td>
</tr>
<tr>
<td>Low Income Countries</td>
<td>Gini</td>
<td>0.143</td>
<td>8.28a</td>
</tr>
<tr>
<td>N = 23</td>
<td></td>
<td>(2.88)a</td>
<td></td>
</tr>
<tr>
<td>Medium Income Countries</td>
<td>Gini</td>
<td>-0.130</td>
<td>11.13a</td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td>(-3.34)a</td>
<td></td>
</tr>
<tr>
<td>High Income Countries</td>
<td>Gini</td>
<td>0.0505</td>
<td>0.48</td>
</tr>
<tr>
<td>N = 15</td>
<td></td>
<td>(-0.70)</td>
<td></td>
</tr>
</tbody>
</table>

Note: R² is the adjusted coefficient of determination; t-values are given in the parentheses below the coefficient. a significant at the 1% level; b significant at the 5% level; c significant at the 10% level.
significant at the one percent level. The direction of relationship is negative, meaning that as GDP/CAP rises the Gini concentration ratio falls. The relationship is not uniform for low, medium and high income countries. For the low income countries the relationship is positive and it is negative for the medium income countries. No significant relation was found for the high income countries.

The relationship between inequality and the level of economic development is amply investigated in the literature and it is known as the Inverted U-curve Hypothesis. Scholars such as Kuznets (1955), Morris and Adelman (1973), Paukert (1973), Ahluwalia (1976), Fields (1980), Ram (1988) and Papanek (1986) have researched the various versions of this hypothesis and reached the general conclusion that inequality increases in the early stages of economic growth, reaches a peak, and then declines. Our results do support this hypothesis.\textsuperscript{15}

Table 2 shows the OLS estimates of equation (2) for our entire sample and the three sub-samples.

In various studies, a strong positive relationship has been found between urbanization and the level of economic development. Logged GDP per capita (Iny) was used as the proxy variable as well as the control variable for various levels of economic development. This will enable us to determine the impact of the variable of urban change on the variables of inequality independent from the national levels of development.

GDP/CAP is a reasonable guide to broad differences in productive capacity and levels of economic welfare in many countries. Table 2 shows that there is a strong relationship between urbanization ratio (URB) and logged GDP/CAP. This relationship was particularly significant for the entire sample ($R^2 = 74.6\%$) and for the low and medium income sub-samples. Clearly, a stronger relation was found for the developing countries than the developed countries. Sometimes, the analogy is made to human’s heights and weights. At the early stages of human development there is a high correlation between height and weight, but when the heights has reached its peak, further growth of weight is not associated with the height. The correlation between urbanization and GDP/CAP is very weak for the developed countries, indicating that when a certain level of development is reached, further growth of urbanization is not associated with the growth of the GDP.

\textsuperscript{15} Here we refer to U-curve hypothesis only in passing. Investigating the detail nature of this relationship is beyond the scope of this study.
### Table 2

**Equation 2 — Cross Country Regression Explaining Urbanization**

<table>
<thead>
<tr>
<th>Sample Size</th>
<th>Dependent Variable</th>
<th>1970 GDP per Capita (b₁)</th>
<th>F</th>
<th>R²</th>
<th>1980 GDP per Capita (b₁)</th>
<th>F</th>
<th>R²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Sample</td>
<td>% Urban (13.51)a</td>
<td>(24.926)</td>
<td>182.41a</td>
<td>74.6</td>
<td>(22.326)</td>
<td>135.3a</td>
<td>68.6</td>
</tr>
<tr>
<td>N = 64</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Income Countries N = 23</td>
<td>% Urban (3.32)a</td>
<td>20.464</td>
<td>11.05a</td>
<td>34.5</td>
<td>13.286</td>
<td>6.51a</td>
<td>23.7</td>
</tr>
<tr>
<td>Medium Income Countries N = 23</td>
<td>% Urban (2.90)b</td>
<td>23.554</td>
<td>8.40a</td>
<td>25.9</td>
<td>21.982</td>
<td>7.65a</td>
<td>24.2</td>
</tr>
<tr>
<td>High Income Countries N = 15</td>
<td>% Urban (1.30)</td>
<td>18.0</td>
<td>1.69</td>
<td>11.5</td>
<td>1.6</td>
<td>0.02</td>
<td>0.10</td>
</tr>
</tbody>
</table>

*Note:* R² is the adjusted coefficient of determination; t-values are given in the parentheses below the coefficient.

a significant at the 1% level; b significant at the 5% level; c significant at the 10% level.

The same pattern of relationship (but somewhat weaker) holds true for 1980.

Using GDP/CAP as the dependent variable while using urbanization (Urb) and the Gini ratio as the independent variables, Table 4 supports our earlier findings that were reported on Tables 1 and 2. Our regression result shows that there is a high correlation GDP/CAP and urbanization for the developing nations (low and medium income countries) and no correlation between these two variables for the developed countries. The relationship between GDP/CAP and the Gini concentration ratio follows the same pattern as was observed on Table 1. The relation is significant and positive for the low income nations and significantly
Table 3
EQUATION 3 — CROSS COUNTRY REGRESSION EXPLAINING
INCOME DISTRIBUTION AND OVERURBANIZATION
(3) $U_1 = C_0 + C_1 U_2 + U_3$

<table>
<thead>
<tr>
<th>Sample Size</th>
<th>1970</th>
<th></th>
<th>1980</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Residuals $(U_2)$</td>
<td>F Statistics</td>
<td>$R^2$ %</td>
<td>Residuals $(U_2)$</td>
</tr>
<tr>
<td>Full Sample, $N = 64$</td>
<td>$-0.000496$</td>
<td>0.30</td>
<td>0.5</td>
<td>$-0.00701$</td>
</tr>
<tr>
<td>Low Income Countries, $N = 23$</td>
<td>$0.0226$</td>
<td>0.78</td>
<td>3.6</td>
<td>$0.00556$</td>
</tr>
<tr>
<td>Medium Income Countries, $N = 26$</td>
<td>$0.00106$</td>
<td>1.22</td>
<td>4.9</td>
<td>$0.00023$</td>
</tr>
<tr>
<td>High Income Countries, $N = 15$</td>
<td>$-0.00415$</td>
<td>22.61$^a$</td>
<td>63.5</td>
<td>$-0.00476$</td>
</tr>
</tbody>
</table>

Notes: $R^2$ is the adjusted coefficient of determination; t-values are given in the parentheses below the coefficient. $^a$ significant at the 1% level; $^b$ significant at the 5% level; $^c$ significant at the 10% level.

negative for the medium income countries. The same pattern of relations existed for the year 1980, however, the coefficients of relations between the GDP/CAP and urbanization are significantly weaker. These results do confirm our second hypotheses that urbanization and income equality are the two important determinants of economic development. The fact that inequality and economic development are inversely related in the medium income countries should be a matter of considerable interest for policy makers in these countries. Our results indicate that disaggregation of our data was important, and the variants of development (urbanization and inequality) do not behave with the same degree of strength across the national development spectrum.
### Table 4
CROSS COUNTRY REGRESSION EXPLAINING GROSS DOMESTIC PRODUCT PER CAPITA

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Sample</td>
<td>GDPC</td>
<td>-0.584</td>
<td>0.0292</td>
<td>91.52&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-0.419</td>
<td>0.0302</td>
<td>67.11&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>0.95 (12.45)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>74.2</td>
<td>67.7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 64</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Income Countries</td>
<td>GDPC</td>
<td>1.58 (2.68)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.0142 (3.12)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>10.74&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2.11 (2.55)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.121</td>
<td>7.37&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 23</td>
<td>51.8</td>
<td></td>
<td>42.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium Income Countries</td>
<td>GDPC</td>
<td>-2.18 (-3.43)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.00959 (3.01)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>11.98&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-2.00 (-2.62)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.0046</td>
<td>4.70&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 26</td>
<td>46.8</td>
<td></td>
<td>22.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Income Countries</td>
<td>GDPC</td>
<td>0.85 (0.51)</td>
<td>0.00977 (1.16)</td>
<td>0.92 (0.22)</td>
<td>-0.39 (-0.10)</td>
<td>-0.0010</td>
<td>0.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 15</td>
<td>13.3</td>
<td></td>
<td>0.6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:** $\bar{R}^2$ is the adjusted coefficient of determination; t-values are given in the parentheses below the coefficient.

- $<sup>a</sup>$ significant at the 1% level;
- $<sup>b</sup>$ significant at the 5% level;
- $<sup>c</sup>$ significant at the 10% level.

GDPC = GDP per capita in international comparable dollars. URB = Percent of population living in urban areas.

Using equation (2), the residuals ($U_2$) are computed from the following formula for 1970 and 1980.\(^{16}\)

$$U_2 = Urb - (b_0 + b_1 \ln y)$$

\(^{16}\) Criticisms are made that there are other variables explaining the level of urbanization and, therefore, Res ($U_2$) contains much of these unexplained factors. This is a valid concern. Suffice it here to say that we have found a very strong correlation coefficient between urbanization and GDP per capita (0.86 for 1970 and 0.82 for 1980) indicating that much of the variations in the level of urbanization are explained by GDP per capita.
This study follows other studies that used residuals \( U_2 \) from the above equation as a proxy variable for relative urbanization or overurbanization (see Timberlake and Kentor, 1983; Bradshaw, 1985, 1987). With a given level of economic development a country can be either above the regression line (with positive residuals), or below the regression line (with negative residuals). Countries which are located near or on the regression line will have the expected (normal) level of urbanization.\(^{17}\)

Appendix Table 1 shows countries with very high positive and negative residuals and their corresponding levels of urbanization and GDP per capita. Two separate dates (1970 and 1980) are included for comparison. One can observe from this table that high levels of relative urbanization (positive residuals), are not necessarily associated with high levels of urbanization. Burma and Zambia are examples of this case. Both countries have relatively large levels of relative urbanization (\( \text{Res} = 17 \) for Burma in 1970 and \( \text{Res} = 13.48 \) for Zambia in 1980), and their levels of urbanization are moderate (\( \text{Urb} = 23\% \) for Burma in 1970 and \( \text{Urb} = 39.7\% \) for Zambia in 1980). This is because these two countries have exceptionally low levels of GDP/CAP for 1970 and 1980.

On the other hand, countries with moderate levels of urbanization such as Barbados, Hungary, Yugoslavia and Portugal can have a very low relative urbanization (negative residuals). This is because their GDP per capita was high relative to their level of urbanization. On the whole, Latin American countries are well represented among the countries with large positive residuals. African countries (Botswana, Sudan, Uganda, Zimbabwe and Gabon) are over represented among the countries with large negative residuals. That is not to say that all African countries have a low level of relative urbanization. Countries such as Zambia, Egypt and Mauritius show a high relative urbanization. Comparing 1970 with 1980 our table shows that countries with high relative urbanization have moved further up the OLS line (\( \text{Res} = 14.35 \) vs 15.04) and countries with very low relative urbanization have moved further down the OLS line (\( \text{Res} = -17.82 \) vs \(-19.10\)).

Table 3 represents the results of OLS estimation of equation (3) which provides the linkage between equations (1) and (2), and is the main instrument to test our first hypothesis. If relative urbanization (overurbanization) is going to influence income equality; then, in equation (3), we would have a significant positive coefficient (\( C_3 \)) for our estimated equation. OLS results reported in Table 3 indicate that none

\(^{17}\) This is the most theoretically valid measure of “overurbanization” used in the literature. For a debate about it’s validity, see Firebaugh and Gibbs (1985), Bradshaw and Radbill (1987).
of our sub-samples (with the exception of the developed countries) have shown a significant coefficient in their estimated equation.

Based on the results reported in Table 3, we do not have any compelling evidence to believe that overurbanization (high relative urbanization) will adversely affect income equality in the developing countries, thus we cannot support our first hypothesis.

It is interesting to note here that for the developed countries (DCs) sub-sample, the OLS results are robust and the variables \( U_1 \) and \( U_2 \) of equation (3) are negatively related. Here one cannot apply the concept of "overurbanization" to these countries.\(^{18}\) Examination of Appendix Table 2 reveals some interesting facts. The correlation coefficient between the Gini ratio and the level or urbanization is high \((r = -0.80 \text{ for } 1970 \text{ and } r = -0.78 \text{ for } 1980)\) and negative for the developed countries, indicating that the higher levels of urbanization in DCs are associated with lower inequalities \((\text{lower Gini ratios})\). This association is not very strong for the developing countries. Appendix Table 2 also shows that developed countries have high average urbanization and GDP/CAP along with relatively \((\text{low Gini ratios})\). In the developing countries we observed higher inequality, lower urbanization and lower GDP/CAP than in the developed countries. In this study we are primarily concerned with relative urbanization, i.e., urbanization level in relation to the level of economic development and its association with inequality. Developed countries are endowed with adequate resources to support their urban centers. In the developing countries, however, the perception has been that their resources are not adequate to cope with the growing urbanization problem and this will exacerbate their income disparities. Our results do not bear our this claim.

**VI. Summary and Conclusions**

Given the rapid growth of urbanization observed in many LDCs, there seems to be a priori grounds for believing that the distributive effects are sizable. Most social and economic planners in the LDCs are at the assumption that the excessive urbanization has created a deteriorating situation for their income distribution. Consequently, policies are adopted which aim at curbing urbanization in the hope of reducing poverty and bringing about a more equitable distribution of income.

---

\(^{18}\) The concept of "overurbanization" is not relevant to the advanced developed economies of Western Europe and North America. We have included these countries in our data set only to obtain a better sense of perspective.
While many authors have noted distributional implications of their results, there has been little rigorous analysis of the impact of over-urbanization on overall economic inequality.

Using internationally comparable data for Gini concentration ratios and GDP/CAP, we did not find a positive correlation between over-urbanization and income inequality for any of our LDC’s sub-samples. The relation between relative urbanization and income inequality was robust and negative for the developed countries, suggesting that higher relative urbanization has a mitigating effect on income inequality in these countries.

Our results have indicated a strong support for our second hypothesis, suggesting that urbanization and equality of income are among the two important elements of economic development. The Gini coefficient ratio in its relation to economic development has shown the familiar inverted U-shape pattern for 1970 and 1980 (see Table 4). The urbanization variable has shown a significant relation with economic development in 1970 but this relationship has weakened significantly in 1980.

There are factors at work here which could explain this non-relationship between overurbanization and inequality in the LDC’s. Economic theory on this subject is fragmentary and we can only speculate on our conclusion. For one thing, as the large urban center expands, it attracts a large percentage of the migrant labor force into high income areas, therefore easing the pressure of population in the rural sectors and hence narrowing income differentials.

Within the urban sector itself, there are factors at work. For example, the impact of an expanded educational system within the modern sector is to create a highly trained labor force who can earn high share of wage income. That will result in a more equal distribution of income.

Another possible explanation is the following. Rural families send their sons and daughters to the big cities so that they can share a small portion of its riches. For those who stay behind in the rural areas, conditions of life may improve as migrants send a portion of their income to their families and sometimes provide services to their fellow villagers with health care and small-scale development projects. The cumulative net effect of all these factors have the mitigating impact on intersectoral income differentials.

Finally, there are few caveats that must be considered when one looks at the type of analysis undertaken here. It would be more appropriate to use longitudinal data for the study of national urbanization and inequality. However, time series data for these aggregates are not
easily available for many LDCs. Sample coverage in terms of size and quality of data, when improved, could possibly lead us to a different result.

We believe that this study contributes to the understanding of the relationships between inequality, economic development, and the rapid growth of urbanization and may provide information useful for public policy on important issues in the developing countries.
Appendix

Table 1

U R B A N I Z A T I O N  R E S I D U A L S,  U R B A N  P O P U L A T I O N  
AND L E V E L  O F  E C O N O M I C  D E V E L O P M E N T  
(Developing Countries)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Large Positive Residuals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Argentina</td>
<td>18.85</td>
<td>78.4</td>
<td>$2750</td>
<td>21.78</td>
<td>82.9</td>
<td>$3208</td>
</tr>
<tr>
<td>Brazil</td>
<td>16.41</td>
<td>55.8</td>
<td>1225</td>
<td>14.78</td>
<td>82.9</td>
<td>2152</td>
</tr>
<tr>
<td>Burma</td>
<td>17.07</td>
<td>23</td>
<td>320</td>
<td>14.78</td>
<td>27</td>
<td>359</td>
</tr>
<tr>
<td>Chile</td>
<td>22.49</td>
<td>75.2</td>
<td>2090</td>
<td>26.82</td>
<td>81.2</td>
<td>2372</td>
</tr>
<tr>
<td>Columbia</td>
<td>15.30</td>
<td>57.2</td>
<td>1335</td>
<td>14.69</td>
<td>63.9</td>
<td>1882</td>
</tr>
<tr>
<td>Egypt</td>
<td>13.97</td>
<td>42.2</td>
<td>783</td>
<td>5.07</td>
<td>43.8</td>
<td>1177</td>
</tr>
<tr>
<td>Israel</td>
<td>19.23</td>
<td>84.2</td>
<td>3419</td>
<td>22.33</td>
<td>88.6</td>
<td>4041</td>
</tr>
<tr>
<td>Mauritius</td>
<td>10.27</td>
<td>42.0</td>
<td>901</td>
<td>0.91</td>
<td>42.4</td>
<td>1332</td>
</tr>
<tr>
<td>Mexico</td>
<td>7.33</td>
<td>59</td>
<td>2005</td>
<td>10.43</td>
<td>66.4</td>
<td>2547</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>7.19</td>
<td>47</td>
<td>1246</td>
<td>12.04</td>
<td>53.4</td>
<td>1324</td>
</tr>
<tr>
<td>Peru</td>
<td>10.95</td>
<td>57.4</td>
<td>1626</td>
<td>16.96</td>
<td>64.5</td>
<td>1746</td>
</tr>
<tr>
<td>Uruguay</td>
<td>23.54</td>
<td>82.1</td>
<td>2643</td>
<td>22.26</td>
<td>83.8</td>
<td>3269</td>
</tr>
<tr>
<td>Zambia</td>
<td>3.99</td>
<td>30.2</td>
<td>722</td>
<td>13.48</td>
<td>39.7</td>
<td>672</td>
</tr>
<tr>
<td>Average:</td>
<td>14.35</td>
<td>56.43</td>
<td>$1621</td>
<td>15.04</td>
<td>61.83</td>
<td>$2006</td>
</tr>
<tr>
<td><strong>Large Negative Residuals</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barbados</td>
<td>-18.34</td>
<td>37.1</td>
<td>$2333</td>
<td>-19.09</td>
<td>40.1</td>
<td>$2944</td>
</tr>
<tr>
<td>Botswana</td>
<td>-17.84</td>
<td>8.4</td>
<td>723</td>
<td>-31.75</td>
<td>15.1</td>
<td>1694</td>
</tr>
<tr>
<td>Gabon</td>
<td>-23.30</td>
<td>25.6</td>
<td>1795</td>
<td>-34.58</td>
<td>35.8</td>
<td>4860</td>
</tr>
<tr>
<td>Hungary</td>
<td>-17.78</td>
<td>45.6</td>
<td>2209</td>
<td>-11.64</td>
<td>53.6</td>
<td>3861</td>
</tr>
<tr>
<td>Malaysia</td>
<td>-12.72</td>
<td>27.0</td>
<td>1242</td>
<td>-18.13</td>
<td>34.6</td>
<td>2204</td>
</tr>
<tr>
<td>Portugal</td>
<td>-27.22</td>
<td>25.9</td>
<td>2126</td>
<td>-30.89</td>
<td>29.4</td>
<td>3092</td>
</tr>
<tr>
<td>Sudan</td>
<td>-10.75</td>
<td>16.4</td>
<td>750</td>
<td>-12.01</td>
<td>19.7</td>
<td>860</td>
</tr>
<tr>
<td>Thailand</td>
<td>-15.18</td>
<td>13.3</td>
<td>791</td>
<td>-21.50</td>
<td>17.3</td>
<td>1181</td>
</tr>
<tr>
<td>Trinidad-Tobago</td>
<td>-21.60</td>
<td>38.8</td>
<td>2847</td>
<td>-9.10</td>
<td>56.9</td>
<td>3994</td>
</tr>
<tr>
<td>Uganda</td>
<td>-15.74</td>
<td>8.0</td>
<td>654</td>
<td>-12.42</td>
<td>8.7</td>
<td>535</td>
</tr>
<tr>
<td>Yugoslavia</td>
<td>-17.13</td>
<td>34.8</td>
<td>2027</td>
<td>-16.56</td>
<td>45.3</td>
<td>3318</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>-16.35</td>
<td>16.9</td>
<td>958</td>
<td>-11.56</td>
<td>21.9</td>
<td>930</td>
</tr>
<tr>
<td>Average:</td>
<td>-17.82</td>
<td>24.81</td>
<td>$1621</td>
<td>-19.10</td>
<td>31.53</td>
<td>$2456</td>
</tr>
</tbody>
</table>

Notes: RES = Relative Urbanization residual, U₂; URB = Urban population as percentage of total population; GDPC = y = GDP per capita in international comparable dollars.
Table 2
CORRELATION COEFFICIENTS BETWEEN GINI RATIO AND THE LEVELS OF URBANIZATION;
AVERAGE GINI COEFFICIENT; AVERAGE LEVEL OF URBANIZATION AND AVERAGE GDP PER CAPITA

<table>
<thead>
<tr>
<th>Sample Size</th>
<th>1970</th>
<th>1980</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Correlation</td>
<td>Average Gini</td>
</tr>
<tr>
<td>Full Sample</td>
<td>-0.326</td>
<td>.4197</td>
</tr>
<tr>
<td>N = 64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low Income</td>
<td>0.214</td>
<td>.4379</td>
</tr>
<tr>
<td>Countries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium Income</td>
<td>-0.130</td>
<td>.4458</td>
</tr>
<tr>
<td>Countries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Income</td>
<td>-0.80</td>
<td>.3462</td>
</tr>
<tr>
<td>Countries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N = 15</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: Average Gini = Average Gini Coefficients; Average URB = Average Urbanization Level; Average GDPC = Average GDP per capita in international comparable dollars.
References


Menard, S., “A Research Note on International Comparisons of In-
equality of Income,’’ Social Forces, 64, 1986, 778-793.


_____ , Third World Cities in Global Perspective: The Political Economy of Uneven Urbanization.


Steward, C.T. Jr. and J.H. Lee,


