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On the Urbanization of Poverty

Martin Ravallion

The poor urbanize faster than the population as a whole. But experience across countries suggests that a majority of the poor will still live in rural areas long after most people in the developing world live in urban areas.

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Summary findings

Ravallion identifies conditions under which the urban sector's share of the poor population in a developing country will be a strictly increasing and strictly convex function of its share of the total population.

Cross-sectional data for 39 countries and time-series data for India are consistent with the expected theoretical relationship.

The empirical results imply that the poor urbanize faster than the population as a whole. But the experience across developing countries suggests that a majority of the poor will still live in rural areas long after most people in the developing world live in urban areas.

This paper—a product of Poverty, Development Research Group—is part of a larger effort in the group to monitor overall trends in poverty in developing countries. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Catalina Cunanan, room MC3-542, telephone 202-473-2301, fax 202-522-1153, email address ccunanan@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The author may be contacted at mravallion@worldbank.org. April 2001. (10 pages)

On the Urbanization of Poverty

Martin Ravallion[1]

Development Research Group, World Bank
1818 H Street NW, Washington DC, USA

1 Address for correspondence mravallion@worldbank.org. Comments were received from Bill Easterly, Alice Mesnard and Dominique van de Walle.

1. Introduction

As is well known, the incidence of poverty is higher in the rural areas of almost all developing countries.[2] And (in the aggregate) most people still live in rural areas. So urban areas account for less than half — about 30% on average — of the poor. But, as is also well known, the population of the developing world is urbanizing quite rapidly. In 1995, 38% of people lived in urban areas, and this is projected to rise to 52% by 2020 (UN, 1996). Is the urban share of poverty also likely to grow? There is evidence that it has been doing so.[3] Will the poor urbanize faster than the nonpoor? How long will it be before most of the poor live in urban areas?

The answers to such questions have bearing on poverty reduction efforts. There are differences in the policy instruments for urban versus rural poverty. Judgements about whether current knowledge and action have the right sectoral composition for fighting poverty will then be influenced by how the urban-rural composition of poverty is expected to evolve. There may also be implications for understanding the political economy of anti-poverty policy. More spatially concentrated and visible forms of urban poverty are likely to generate new pressures on governments to respond, and in ways that may or may not be coincident with good policies for overall poverty reduction.

To help throw light on these issues, this paper provides a simple but seemingly insightful theoretical representation of the urbanization of poverty, and shows that this is consistent with poverty data for countries over a wide range of urban population shares. Implications are drawn for the future urbanization of poverty.

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[2] Lipton and Ravallion (1995) survey the evidence on this point, and related work on rural-urban migration in developing countries.

[3] Haddad et al., (1999) compile urban and rural poverty measures for eight countries; for seven of them they find that the urban share of the total number of poor rose over time.

2. A theoretical representation of the urbanization of poverty

Let $P_u(S_u)$ be a single-valued function from [0,1] to [0,1] giving the urban sector's share of the poor when its share of the population is S_u, and let

$$h(S_u) \equiv \frac{H_u(S_u)}{H(S_u)} = \frac{P_u(S_u)}{S_u} \tag{1}$$

be the incidence of poverty in urban areas (H_u) relative to its national incidence (H). The latter is given by:

$$H(S_u) = S_u H_u(S_u) + (1 - S_u) H_r(S_u) \tag{2}$$

where H_r is the rural incidence of poverty. Since we are interested in the association between urbanization (a rise in S_u) and poverty, the urban and rural poverty measures are written as functions of S_u; these functions are assumed to be differentiable. Writing the poverty measures as functions of S_u does not, of course, mean that S_u is exogenous; here the interest is in how these variables co-move, rather than causality.

What properties can we expect $P_u(S_u)$ to have? At low S_u, one can imagine a small urban enclave, containing the government and services. The poverty rate in this initial urban enclave is far lower than in surrounding rural areas. In the limiting case, we can assume that $H_r(0) > 0$ and hence $P_u(0) = 0$. At the other extreme, it must of course be the case that $P_u(1) = 1$. Between these extremes, migration proceeds from rural to urban areas. The out-migrants may or may not be poorer than those left behind, but it is assumed that the migration process comes with a lower incidence of poverty in the aggregate. This may be a direct effect of the income gains to the migrants, or an indirect effect via their remittances to rural areas, or a consequent tightening of the rural labor market.

Even though poverty is falling nationally with urbanization, the outcome could look quite different in urban areas, since the migrating workers are (at least initially) poorer than the urban population on average. In the spirit of the classic model of Harris and Todaro (1970), suppose that escaping poverty in urban areas means getting a "formal sector" job at a real wage rate that is fixed, or at least does not fall as S_u increases. Urban (formal-sector) firms maximize profits, such that the marginal product of labor is decreasing. Then:

$$F'[(1-H_u(S_u))S_u] = W_u(S_u) \text{ with } W_u'(S_u) \geq 0 \qquad (3)$$

Here $W_u(S_u)$ is the urban wage rate, and $F'(.)$ is the marginal product of formal sector labor (with $F''(.) < 0$). Alternatively one can assume a competitive urban labor market, and interpret $W_u(S_u)$ as the inverse supply function of labor to the urban sector, assuming that a higher formal sector wage attracts rural workers.[4] A readily verified implication of (3) is that H_u and S_u must move in the same direction ($H_u'(S_u) > 0$). The incidence of urban poverty will rise with urbanization even when aggregate poverty is falling.

These assumptions can be weakened to allow urban poverty incidence to fall as S_u rises. This can happen if the urbanization is associated with either higher productivity in the urban economy (an upward shift in $F'(.)$ at given employment) or lower urban wages ($W_u'(S_u) < 0$). But let us assume that these effects are not so strong as to alter the property of this model that, as the population as a whole urbanizes, urban poverty rises

[4] Although S_u is endogenous, one can still ask how H_u and S_u co-move in equilibrium.

relative to the national mean, i.e., $h'(S_u) > 0$ for all S_u in [0,1]. Note that this does not require that the urban poverty rate rises relative to the rural rate; H_u / H_r is increasing in S_u if and only if $h'(S_u)$ exceeds $(1-h)h/(1-S_u)$.

The function $P_u(S_u)$ must then be increasing and convex as in Figure 1. It is plain that $P_u(S_u)$ is increasing, but convexity is less obvious. Suppose, to the contrary, that it is strictly concave in some interval. Within that interval there will then be a point S_u^* such that the slope reaches a maximum, i.e., $P_u'(S_u^*) = P_u(S_u^*)/S_u^* = h(S_u^*)$. If $S_u^* < 1$ then $h(.)$ must be a decreasing function for some $S_u > S_u^*$ — a contradiction. When $S_u^* = 1$, $P_u'(S_u^*) = 1$. Since $P_u'(1) = h'(1) + h(1)$ and $h(1)$=1, this requires that the left derivative of h vanishes, $h'(1) = 0$ — also a contradiction. This proves that there cannot be an interval within [0,1] for which the curve is concave under the assumptions of this model.

Figure 1 is then the shape of $P_u(S_u)$ under these conditions.

3. Calibrating the curve to cross-country data

A specification for $P_u(S_u)$ with sufficient flexibility to test the main assumptions above is a cubic function, whereby $h(S_u)$ has the quadratic form:

$$h(S_u) = 1 - \beta(1-S_u) + \gamma(1-S_u)^2 + \varepsilon \quad (4)$$

where β and γ are parameters to be estimated and ε is a zero mean error term. $P_u(S_u)$ passes through (0,0) and (1,1) when the curve is evaluated at the expected value of h.

World Bank (1999, Table 2.7) provides a compilation of estimates of urban and rural poverty incidence for 39 countries. The estimates are drawn from country poverty studies by the World Bank, and all are based on household survey data. Methods of setting poverty lines vary between countries, however, and the differences can matter to comparisons of urban and rural poverty incidence.[5] These data would appear nonetheless to be the available data source for the present purpose. I will use the urban population share implicit in the urban, rural and national poverty rates, though I test sensitivity to using the Census-based urban population shares given in the same source.

Using these data, I initially regressed $h-1$ on a constant term, $1-S_u$ and $(1-S_u)^2$; the constant and the coefficient on $(1-S_u)^2$ were jointly insignificant (F=0.53, which rejects the null with probability 0.59).[6] If one sets the constant to zero (as in (4)), the coefficient on the squared term is not significantly different from zero (t = –0.66) and the estimate of β is 0.451 with a standard error of 0.072. (Similarly, the constant term is insignificant if one suppresses the squared term.) Dropping both the constant and the squared term, I obtained an estimate of 0.468 for β with a (robust) standard error of 0.060 (n=39).[7] The estimate is significantly positive, and significantly less than one. Figure 2 plots the data and fitted values.

So the data suggest that:

$$P_u(S_u) = [1-\beta(1-S_u)]S_u \qquad (5)$$

with β around 0.5. The speed at which poverty urbanizes is related to the overall speed of urbanization according to:

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5 See Ravallion and Bidani (1994) who compare alternative methods of setting urban and rural poverty lines in Indonesia. Also see the discussion in Haddad et al., (1999).

6 White standard errors are used throughout.

7 If instead one uses the Census-based urban population shares the estimate is 0.473 with a standard error of 0.083.

$$\frac{\partial \ln P_u}{\partial t} = \left(1 + \frac{\beta S_u^2}{P_u}\right) \cdot \frac{\partial \ln S_u}{\partial t} \quad (6)$$

At sample means (S_u=0.423; P_u=0.321, with β=0.468), the poor urbanize at a speed 26% higher than the population as a whole.

How much does H_u / H_r rise with urbanization? It is readily verified that:

$$\frac{H_u}{H_r} = \frac{1 - \beta(1 - S_u)}{1 + \beta S_u} \quad (7)$$

H_u / H_r increases monotonically with S_u (with a slope of $[\beta/(1 + \beta S_u)]^2$). (Equation 7 is derived by first noting that $H_u / H_r = h(1 - S_u)/(1 - hS_u)$ and then substituting $h = 1 - \beta(1 - S_u)$.) At its lower bound, $H_u(0)/H_r(0) = P_u'(0) = 1 - \beta$ while $H_u(1)/H_r(1) = 1/(1 + \beta)$. So, with urbanization, the urban poverty rate rises relative to the rural rate, but it does so rather slowly; between $S_u = 0$ and $S_u = 1$, the urban poverty rate rises from about one half to two-thirds of the rural rate.

4. Time series evidence for India

There are very few countries with the time series data needed to estimate (4). An exception is India, for which a reasonably long time series of comparable, nationally representative, household surveys allow us to study how the urban-rural poverty profile has evolved with urbanization. I repeated the above analysis using 14 survey rounds spanning 1974-1997/98.[8] Again I found that a linear h function performed well giving an estimate of 0.151 for β with a robust standard error of 0.019. Again this is significantly

[8] The data are from Datt (1999) and are a slightly updated version of the data set described in Özler, Datt and Ravallion (1996) and http://www.worldbank.org/poverty/data/indiap aper.htm.

positive (and less than one). However, the estimate is much lower than for the cross-country data. The "India curve" implies a lower urban-rural disparity in poverty rates, and this varies little with urbanization.

It may, however, be hazardous to try to infer what happens with urbanization from these data for India. Over this 25-year period, the urban share of the population in India spans a relatively narrow range, from 21% to 27%. By contrast, the cross-country comparisons above span a range from 10% to 85%. The India curve may be close to the 45-degree line at low levels, but fan out later.

5. Conclusions

Under certain conditions, the urban share of the poor in a developing economy will be an increasing convex function of the urban share of the population; the higher the initial level of urbanization, the larger the effect on the proportion of the poor living in urban areas of any given increment to the urban population share. Supportive evidence for this relationship is found in data for a cross-section of developing countries and in time series data for India.

If poverty urbanizes consistently with the cross-country relationship modeled above, then the urban share of poverty will reach 40% in 2020, when the urban share of the population is projected to reach 52% (UN, 1996). At the projected growth rate in the urban population share between 2015 and 2020 in UN (1996), the urban share of the total number of poor will reach 50% by 2035, when the urban population share reaches 61%.

References

Datt, Gaurav (1999). "Has poverty in India declined since the economic reforms?," *Economic and Political Weekly* 34 (December 11-17).

Haddad, L., Ruel, M. T., Garrett, J. L. (1999). "Are urban poverty and undernutrition growing? Some newly assembled evidence." *World Development* 27(11), 1891-1904.

Harris, John R., and Todaro, Michael P. (1970). "Migration, unemployment and development: A two sector analysis," *American Economic Review* 40, 126-142.

Lipton, Michael and Ravallion, Martin, (1995). "Poverty and policy," in J. Behrman and T.N. Srinivasan (eds) *Handbook of Development Economics Volume 3*, Amsterdam: North-Holland.

Özler, Berk, Datt, Gaurav, and Ravallion Martin (1996). "A database on poverty and growth in India," http://www.worldbank.org/poverty/data/indiap aper.htm.

Ravallion, Martin and Bidani Bidani (1994). "How robust is a poverty profile?" *World Bank Economic Review* 8(1), 75-102.

United Nations Secretariat (1996). *World Urbanization Prospects: The 1996 Revision*, Population Division, Department of Economic and Social Affairs.

World Bank (1999). World Development Indicators, Washington DC: World Bank.

Figure 1: The urbanization of poverty

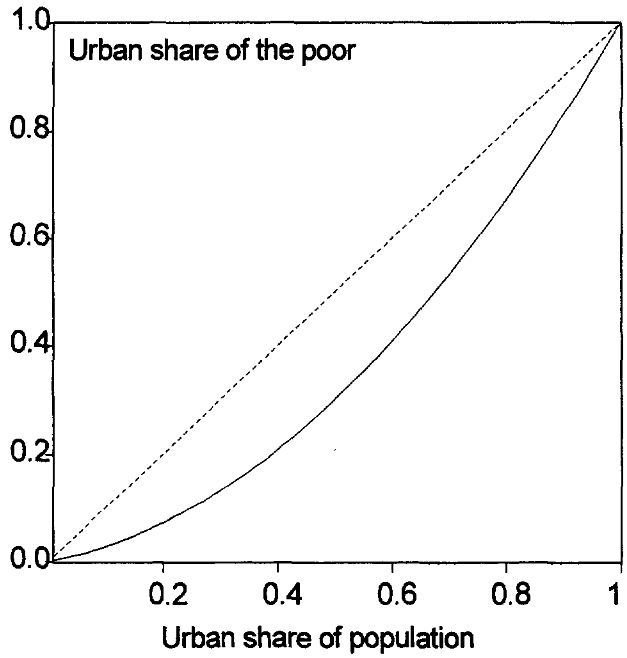
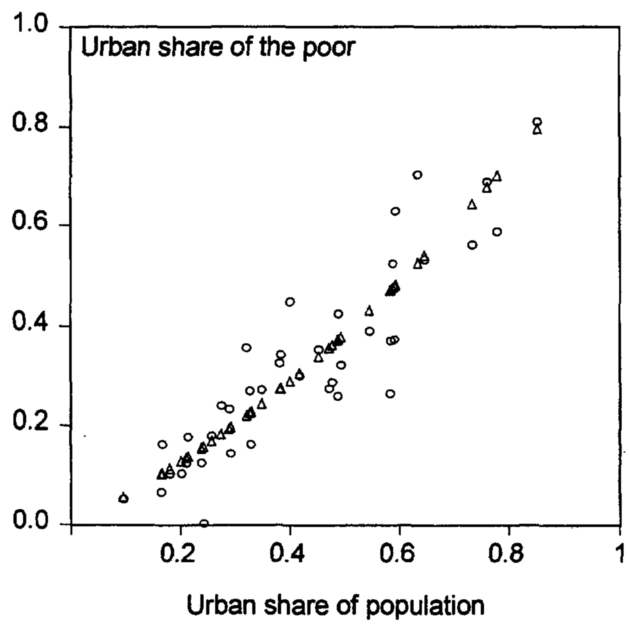


Figure 2: Data for 39 developing countries



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