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Informal sector, income inequality and economic development

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ABSTRACT

This paper addresses – with the help of numerical simulations – some of the issues relating to income distribution in the context of development of an economy with an informal sector and migration of both low- and high-skilled workers from the rural to the urban area. A major aim has been to see under what conditions we do or do not get an inverted U-shaped curve of income distribution. The paper finds that the tendency always is for the Gini coefficient to rise and then decline. However, once it starts declining, it need not continuously decline; it may rise, then decline, then rise again and indeed rise above the previous peak before starting to decline again and may well end at the end of the simulation at a higher value than at the start. Any case for the redistribution of income is seen to be much stronger at the later stages of development that at earlier stages, even though at later stages, Gini coefficient may be lower than at earlier stages. The policy implications of the findings are considered.

1. Introduction

We owe to the pioneer work of Kuznets (1955) the hypothesis that income inequality first rises and then falls with development, tracing out an inverted U-shaped curve. Kuznets argued that during the early stages of development, most of the population will be in the agricultural sector, with low per capita income but low inequality, incomes in the rural area being more equally distributed than in the urban area. As people begin to migrate to the higher-income urban area, overall inequality will increase. During the later stages of development, however, this force for inequality would be more than offset by a decline in inequality within the urban area, owing to the better adaptation of the children of rural–urban migrants to city life and "growing political power of the urban lower-income groups" to enact "a variety of protective and supportive legislation" (p17).

The empirical validity of the Kuznets curve continues to remain in question. Part of the problem is methodological. Reliable time series data on the distribution of income, over any substantial period, are not available for most developing countries. Two approaches have therefore usually been taken by researchers in this area. One is to assume that different countries observed at different levels of development at a given point in time chart the path that a typical country would follow over a long period of time, and then examines whether the cross country data yield an inverted-U plot of inequality against level of development, as measured by per capita income. The other approach is to examine changes in inequality within countries over the short periods for which data are available, and see whether inequality has risen in relatively less developed countries and declined in more developed countries.[1]

The Kuznets curve has received support in cross-sectional studies by Paukert (1973), Cline (1975), Chenery and Syrquin (1975), Ahluwalia (1976) and Papanek and Kyn (1986), among others. However, the findings of the cross-sectional studies have been questioned, among others, by Anand and Kanbur (1993) who show that the results are very sensitive to the choice of data set and that one can get U relationship, inverted-U relationship or very little relationship at all by making different choices.

In a study exemplifying the second of the two approaches mentioned earlier, Fields (1991) has shown that "inequality increases with growth as frequently in the low-income countries as in the high-income countries. There is no tendency for inequality to increase more in the early stages of economic development than in the later stages" (p45).

There are others, however, who continue to hold that there is still good evidence for the Kuznets curve. The difficulty, they argue, is that many other factors, in addition to the level of development, affect a country's level of inequality. Once the analysis accounts for these factors, the Kuznets curve, as it were, "comes out of hiding". Barro (2000), in particular, has forcefully argued for this view.

[1] See Campano and Salvatore (2007) for a recent discussion of the issues surrounding economic development and income distribution.

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Given the conflicting nature of the available empirical evidence, the scarcity of reliable time series on income inequality spanning several decades, and the multitude of factors likely to affect a country's level of inequality, the use of numerical methods would appear to be particularly appropriate here. It is, therefore, surprising that numerical methods have so rarely been employed in this area. Such methods can clearly complement both theoretical and empirical work. Numerical examples can both illustrate the important results and show how sensitive they are to changes in key parameters and initial conditions. The purpose of this paper is to use numerical methods to address some of the issues surrounding income distribution and the hypothesis of inverted-U curve. A major aim will be to highlight the key role that the informal sector plays in the evolution of income distribution. The explanations offered for the existence or non-existence of the inverted-U curve have not in general incorporated the role of the informal sector in any systematic way.

In much of the theoretical literature, following Todaro (1969) and Harris and Todaro (1970), the informal sector is viewed as being essentially a stagnant and unproductive sector, serving merely as a refuge for the urban unemployed and as a receiving station for newly arriving rural migrants on their way to the formal sector jobs.[2] In sharp contrast, the empirical literature increasingly sees the informal sector as dynamic, efficient, contributing significantly to national output and capable of attracting and sustaining labour in its own rights.[3] Studies show that the share of the urban labour force engaged in informal sector activities is growing and now ranges from 30% to 70%, the average being around 50%. Empirical findings also show that many migrants from the rural to the urban area are attracted by income earning opportunities in the informal sector itself; also that there is very little job search activity by the workers in the informal sector.[4]

The present writer has elsewhere (Bhattacharya 1993a, 1994, 1998b) presented and analysed a three-sector general equilibrium model of a developing economy which systematically incorporates an informal sector and, in the dynamic version of the model, presented migration functions alternative to those employed in the Todaro and Harris–Todaro-type models. I now use this model as the base for the simulation exercises to be performed here. In the simulation model, the aim, in particular, will be to consider a number of different scenarios relating to the evolution of the primary or formal sector wage and to study the implications of these for the evolution of income distribution.[5] I shall also report the results of considering the effects of migration of both low and high-skilled workers from the rural to the urban area as also the effects of skill-biased technological change. The focus will be on Lorenz curves, the evolution of Gini coefficient and to see if and under what conditions we do or do not get an inverted U-shaped curve of income distribution. We shall also consider the policy implications of the findings.

This paper is organised as follows. Section 2 presents a brief outline and then sets out the final equations of the static model of the economy. Section 3 sets out the dynamic model. The simulation model and the results of the numerical solution are discussed in Section 4. Section 5 considers the policy implications and concludes. Table 1 summarises the notation used in the paper and is provided for convenient reference.

Table 1
Summary of notation.

F	The number of firms/owners of firms in the formal sector
f	The number of workers employed in the formal sector
f_F	The number of workers employed in an F-sector firm
h	The number of rural hirers
i	The number of firms in the I_M-sector (each firm having an owner/manager)
L	The total labour in the urban area
l^*	The maximum permissible size of firms beyond which the "minimum" wage comes into operation/the number of workers employed in an $I_M$firm
l_h	The amount of manual labourer employed by a rural hirer
l_m	Manual labourer
m	The number of manual labourers
p	The price of the I_M-sector output
q	The price of the R-sector good
R_H	Rural hirer
S_F^c, S_f^c	The amount of informal services consumed by an F-sector employer and F-sector employee, respectively
v	The wage in the informal sector
v^*	The "minimum" wage in the formal sector
w	Wage in the rural sector
X	The R-sector output
X_h	Output produced by a rural hirer
X_F^c, X_f^c, X_h^c, X_m^c, X_i^c, $X_i^{c\delta}$	The amount of R-sector goods consumed by an F-sector employer, F-sector employee, a rural hirer, a manual labourer, an informal sector worker, and the owner/manager of an informal sector firm, respectively
Y	The F-sector output
Y_F	The output produced by an F-sector firm
Y_h	The amount of F-sector output used as input by a rural hirer
Y_F^c, Y_f^c, Y_h^c	The amount of F-sector goods consumed by an F-sector employer, F-sector employee and a rural hirer, respectively
Z	The I_M-sector output
Z_F	The amount of I_M-sector output used as input by an F-sector firm
α	The fraction of their profit that is spent on consumption by an F-sector employer ($(1-\alpha)$of profit, Π_F, being reinvested within the F-sector)
β_h	The natural rate of increase of rural hirers
β_L	The natural rate of increase of urban labour
β_m	The natural rate of increase of manual labourers
δ	The "reward demanded" by the entrepreneurs for the setting up of $I_M$firms
Π_h	The profit of an R_H
Π_F	The profit of an F-sector employer

2. The static model: the model outline and the final equations

We have the following three sectors in our economy: the rural sector (R-sector) which, as the name implies, is located in the rural area; and the formal and informal sectors (F- and I-sectors, respectively), both located in the urban area. The people in the rural sector are divided into two groups: those who own land and those who do not. We call the former the rural hirers (R_H) and the latter, the manual labourers (l_m). A rural hirer supervises agricultural operations in the land that he owns; he "cultivates" this land by hiring landless labourers, i.e. by hiring l_m. We assume that he hires this labour at a market wage and not at a conventional wage. He also uses inputs from the F-sector of the economy.[6]

In the urban area, the distinction between the formal and informal sectors is based on the fact that due to the existence of the Minimum Wage Act, a firm in the urban area which employs more than a specified number of workers, say l^*, is required to pay a wage which is "institutionally" determined and is above the free market wage: the formal sector in this economy then consists of all such firms.[7] The informal sector, by contrast, consists of firms which obtain labour at

[2] For a review of this literature, see Bhattacharya (1993a).

[3] See, among others, ILO (1972), Sethuraman (1976), Bhattacharya (1996, 1998a) and Gillis et al. (1987).

[4] See, for example, Bhattacharya (1993b, 2002). See also Williamson (1988) for a review of some of the empirical evidence. As Williamson puts it "Todaro's job-lottery and high unemployment view of urban labour markets in the Third World simply fails to pass the test of evidence".

[5] The paper also considers a number of other dynamic features of the model not explored in Bhattacharya (1998b).

[6] For example, fertilisers.

[7] See also the discussion in the text on p. 5. It is, of course, the case that taxation also generally applies only to formal sector firms and there is, therefore, an incentive for some firms to claim an informal status by functioning just below the radar of the tax authorities. However, for analytical purposes at hand, the key distinction is one of how wages get determined in the two sectors.