R. H. Sabot

The Meaning and Measurement of Urban Surplus Labour

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(continued on inside back cover.)
THE MEANING AND MEASUREMENT OF URBAN SURPLUS LABOUR

By R. H. SABOT

Introduction

The attention recently given to the problem of urban surplus labour in developing countries has been occasioned in part by the disappointing performance with regard to employment generation of the industrialization strategies followed by many developing countries over the last decade. Despite significant investment, the rate of growth of industrial employment has frequently lagged behind not only industrial output growth but also population growth (Morawetz, 1974). The recognition that, unlike unemployment in the industrialized countries, the labour market imbalance is not predominantly a consequence of cyclical downturns in economic activity, but is chronic in nature and unsusceptible to demand augmenting remedial policies, has also stimulated interest. Indeed, there is evidence (Barnum and Sabot, 1977) to support the unconventional contention (Todaro, 1969) that demand and supply in the urban labour market interact such that an increase in the former leads to an increase in the magnitude and perhaps even the rate of unemployment, as a consequence of an increase in migration from rural areas.

The concern with urban labour market imbalance is not a response to firm evidence that the magnitude of the problem is large and growing. Labour market surveys are scarce in developing countries, but more fundamentally, despite considerable analysis of what is meant by surplus labour in rural areas (Kao, Anschel, Eicher, 1964), little has been done to clarify the concept in the context of urban labour markets. The measure of labour market imbalance devised in the industrial countries and entailing the division of the total population into three distinct and mutually exclusive categories, those not in the labour force, the employed, and the unemployed does not capture the full extent of the problem because in developing countries employment cannot be treated as a discrete homogeneous category. Assertions that the problem of urban surplus labour is grave are frequently substantiated by reference to the number of workers engaged in marginal, low-income activities, an indication of which is the gap between ‘modern sector’ wage employment and urban population. However, in at least some segments of urban ‘informal sectors’ the observed

1 Thanks are due to P. Collier, A. Hazlewood, D. Jackson, E. F. Jackson, H. Leibenstein, P. Streeten, and to participants in seminars at Harvard and Oxford for helpful comments on an earlier draft of this paper. Financial support from the Development Centre of the OECD, the IBRD, and the Rockefeller Foundation are gratefully acknowledged.
relatively low capital/labour ratios may be due to different relative factor prices than in the ‘formal sector’ rather than a reflection of the absorption of excess supplies of labour. More generally simply documenting the proportion of workers with incomes below a certain poverty level as is also done in most measures of ‘invisible underemployment’, is not a measure of labour market imbalance as it leaves unanswered the fundamental question of the nature of the relationship between the income criterion applied and the excess supply of urban labour.

The aim of this paper is to clarify the definition of urban surplus labour and to measure its magnitude, in one context, that of Tanzania, with greater precision than has previously been possible. This entails deriving an income criterion from the intersectoral misallocation model of unemployment that imbues underemployment or, to distinguish the concept suggested here from the conventional ones, employed surplus labour, with the same normative implications with regard to labour allocation as open unemployment.

Employment and unemployment statistics are subject to two types of error: inaccuracies in a measure given its definition and divergences between two or more measures, often related for purposes of economic analysis, but based on differing definitions. The empirical analysis of imbalance between supply and demand in Tanzania’s urban labour market required the design and administration of a sample survey to serve as a new source of data. Though this survey is less detailed than we might have desired, it is an improvement on the existing sources, which suffer from a high degree of error, not in the precise statistical sense that can be expressed numerically as the standard error in comparing various samples of the same population, but in the more general sense of imperfection and incompleteness in description. The survey allows us, in Section I, to determine the sensitivity to alternative specifications of the hazy borderlines between labour force participants and non-participants, and between the employed and the non-employed, of our measure of the aggregate rate of open urban unemployment. It also allows us, in Section II, to examine the principal features of labour utilization in the own-account sector as a way of assessing the short-cut method, in which the proportion of own-account

1 The distinction between the modern and informal sectors is in itself rather ambiguous. The recent ILO mission to Kenya defines the ‘modern sector’ as including all workers enumerated in government surveys of establishments. The ‘informal sector’ includes all other employed workers. See ILO (1972).
2 See ILO (1966).
3 The National Urban Mobility Employment and Income Survey of Tanzania (NUMEIST) gathered data from 5,500 randomly selected adult respondents in seven urban areas in Tanzania on their demographic mobility, current employment, employment history, and income characteristics. For details on sample selection, questionnaire design, reliability of the data, and other methodological questions, see Sabot (1977).
workers in the urban labour force is used as a proxy, of measuring employed surplus labour.1

Following a brief critique of several other conventional measures of underemployment in Section II, we extend the sectoral misallocation model in Section III by adding a third sector, urban in location and characterized by an absence of barriers to entry and flexible wages. It is shown that, as long as employment and waiting in the queue for high-wage jobs are not mutually exclusive activities, some of the excess supply of urban labour will enter this sector and accept an income below what could be earned in the rural areas. These workers are the employed surplus labour, not in the conventional sense that their removal from the urban sector would not reduce urban output, but in the more limited sense that their transfer to the rural sector would increase national output. The rate of employed surplus labour is estimated for urban Tanzania and the sensitivity of the estimate to alternative specifications of the rural income criterion is determined.

I. Open unemployment

The unemployed, those involuntarily without paid employment, are generally identified with reference to some positive action which they themselves have taken during a given period, such as going to a government employment office, waiting in a job queue at a factory gate, or writing a letter to a potential employer. Table I reveals that when this labour force participation criterion of active job search is applied, the aggregate rate of open unemployment is only 8 per cent of the 'labour force'. The rate varies, however, with alternative concepts of labour force participation and employment. Consider first the amount of 'hidden unemployment' revealed by a change to a passive job search criterion and then the amount of 'hidden employment' that results from using marketed production as a criterion for identifying economic activity.

When there are only frictional levels of unemployment in the labour market, the direct costs of seeking a job do not influence the decision whether or not to do so. However, with a significant level of urban surplus labour and downwardly inflexible wages, the cost of job search is likely to be introduced as a component of the labour supply function. For some urban residents, though, the wage of those in employment will exceed the reserve price of their labour, the expected net returns to active job search, the wage minus the expected costs of job search (the latter increasing with the level of surplus labour), will be less than their reserve price. This implies that more people are willing to work at the going wage than are engaged in active job search.

1 While the terms own-account sector and informal sector are not synonymous, the self-employed are likely to comprise a significant majority of the informal sector.
Table I
Rates of open unemployment in urban Tanzania in 1971 under alternative job search criteria and definitions of employment

<table>
<thead>
<tr>
<th></th>
<th>Males(^a)</th>
<th>Females(^b)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>100 (\frac{U_a}{E + U_a})</td>
<td>4.5</td>
<td>20.5</td>
</tr>
<tr>
<td>2.</td>
<td>100 (\frac{U_a + U_p}{E + U_a + U_p})</td>
<td>5.8</td>
<td>32.5</td>
</tr>
<tr>
<td>3.</td>
<td>100 (\frac{U_a - S_a}{E + S + U_a})</td>
<td>4.2</td>
<td>15.2</td>
</tr>
<tr>
<td>4.</td>
<td>100 (\frac{U_a - S_a + U_p - S_p}{E + S + U_a + U_p})</td>
<td>5.4</td>
<td>20.0</td>
</tr>
</tbody>
</table>

where \(U_a\) = Numbers without money income actively seeking paid employment.
\(U_p\) = Numbers without money income ‘passively’ seeking paid employment.
\(E\) = Numbers in paid employment.
\(S\) = Numbers producing goods for home consumption or barter.
\(S_a\) = Numbers producing goods for home consumption or barter actively seeking paid employment.
\(S_p\) = Numbers producing goods for home consumption or barter ‘passively’ seeking paid employment.

\(^a\) 52.3 per cent of total sample.
\(^b\) 47.7 per cent of total sample.


To adjust for the discouraged worker phenomenon and the consequent ‘hidden unemployment’ row 2 of Table I presents estimates of the rate of open unemployment based on a ‘passive job search’ criterion—an individual is considered a labour force participant if he (or she) indicated in the survey that he was looking for paid employment whether or not he had engaged in active job search within the reference period.\(^1\) The expression of the intention to work is a better indicator than active job search for willingness to work at the going wage both because the former reflects the response to the cost of job search while the latter does not and because in African labour markets the job search process does not necessarily involve the formal channels noted above. Individuals frequently secure jobs on the basis of information from members of family or friends who are employed. Relaxing the job search criterion increases the aggregate urban unemployment rate in Tanzania by one-half to a total rate of 12 per cent.

\(^1\) An alternative approach to measuring hidden unemployment is to estimate a labour force participation function and to use the coefficient on the unemployment variable to estimate the size of the labour force under conditions of full employment. The difference between the full employment labour force and that measured on the basis of the active job-search criterion constitutes hidden unemployment.
The unemployment estimates in rows 1 and 2 are based on the assumption that all adults other than those who earn a cash income either are not in the labour force or are unemployed. Production for the market is thus the criterion for distinguishing between economic and non-economic activity for those not earning a wage. That a peasant who supported his family without participating in the cash market would be viewed as not contributing to national income and outside the labour force illustrates the arbitrariness of this criterion. Though production for home consumption or barter is far less important in towns than in rural areas, 2 per cent of all adult urban males and 14 per cent of women grow crops to feed their families, or produce non-agricultural goods that never reach the market (Sabot, 1977a). Earners of low money incomes are counted among the employed and there is no apparent reason why producers of goods for home consumption or barter should be treated differently. Therefore in Table I, rows 3 and 4, of those who produce goods for home consumption or barter, those who have been seeking work are transferred from among the unemployed to the employed, while those who have not been seeking work are transferred from 'out of the labour force' to the employed. For males the effect on their rate of unemployment is insignificant, for females the rate of 'unemployment' decreases from 33 to 20 per cent, thus lowering the aggregate rate of urban open unemployment in Tanzania from 12 to 10 per cent.¹

II. Rejection of an identity between employed surplus labour and the self-employed

If we view employment as a continuous rather than as a discrete and homogeneous variable, many urban jobs in developing countries can be seen to be closer to the unemployment than to the full employment end of the continuum. Before we can assess the amount of urban surplus labour in Tanzania we must determine the place of the dividing line between 'adequate' and marginal employment; or, viewed from the perspective of the labour force, the dividing line between employed workers who are 'surplus' and those who are fully employed.

One way to do this is to use the gap between the rate of growth of wage employment and that of the urban labour force as an indicator of the trend in the magnitude of urban market imbalance (Frank, 1968; Todaro, 1971). Applying this method in a static framework requires the assumption that all own-account workers are surplus labour and all wage earners are non-surplus. The application of this method to Tanzania yields a total of 30 per

¹ For discussion of the determinants of unemployment rate differentials between men and women and among other population sub-groups, and their implications for the assessment of the resource and subjective costs of urban surplus labour, see Sabot (1977b).
cent of the urban labour force as surplus labour, 10 per cent as unemployed, and 20 per cent as employed surplus labour. The accuracy of this measure, however, depends on the realism of the rather heroic assumption of an identity between employed surplus labour and own-account workers. Reynolds has described the marginal jobs in which employed surplus labour is likely to be found:

Entrance to the occupations in question is open. Most of them require little or no skill, and also little or no capital. They thus provide a natural entry point for migrants from the country, who win a precarious foothold in the urban economy by crowding into petty trade, services and other small-scale activities. Overmanning of these activities contributes to low output and income per worker (Reynolds, 1969).

Thus we can assess the realism of this assumption by examining the activities, stability in employment, and incomes of own-account workers.

### Table II

**Distribution of own-account workers according to type of activity: urban areas of Tanzania in 1971**

<table>
<thead>
<tr>
<th>Type of activity</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Services sub-sector:</strong></td>
<td></td>
</tr>
<tr>
<td>Street trading</td>
<td>20.6</td>
</tr>
<tr>
<td>House rental</td>
<td>17.2</td>
</tr>
<tr>
<td>Shopkeeping</td>
<td>16.9</td>
</tr>
<tr>
<td>Transport</td>
<td>6.9</td>
</tr>
<tr>
<td>Hotel barkeeping</td>
<td>4.0</td>
</tr>
<tr>
<td><strong>Sub-total</strong></td>
<td><strong>65.6</strong></td>
</tr>
<tr>
<td><strong>Goods-producing sub-sector:</strong></td>
<td></td>
</tr>
<tr>
<td>Crafts, manufacturing</td>
<td>14.3</td>
</tr>
<tr>
<td>Cultivation</td>
<td>12.4</td>
</tr>
<tr>
<td>Contracting</td>
<td>5.8</td>
</tr>
<tr>
<td>Fishing</td>
<td>1.7</td>
</tr>
<tr>
<td><strong>Sub-total</strong></td>
<td><strong>34.2</strong></td>
</tr>
</tbody>
</table>

*a* In urban areas or periphery.

*b* Sub-totals do not add to 100 due to rounding.

**Source:** NUMEIST, 1971.

If we judge scale by the amount of initial capital required, rather than by the value of output relative to large-scale establishments only street-trading appears to be uniformly small-scale among the service activities which employ 66 per cent of the total of own-account workers. (See Table II.) The transport sub-group contains owners of taxis and lorries, even men with several vehicles and hired drivers, as well as menial porters. Among shopkeepers though some have only a small stall, others have stores large enough to require the assistance of hired or family labour. Though luxury housing has been nationalized and most rentiers let only a room or two,
there are some with several eight-room 'Swahili' dwellings at their disposal. The hotel and bar category includes owners of modern establishments in the centre of the city as well as workers who sell indigenous beer at a stand under a palm tree in the 'suburbs'. Like lack of capital, absence of the necessary skill can be a barrier to entry into an occupation, particularly in manufacturing, where tailors, cabinet makers, bakers, and brewers are in the majority, and in contracting, which includes masons, roofers, carpenters, electricians, and plumbers. Among goods-producing activities, only cultivation appears to be uniformly small-scale; though land scarcity is likely to constrain entry to this activity.

**Table III**

*Proportion of male migrants relying on various sources of funds during first two months in town: Tanzania, 1971*

<table>
<thead>
<tr>
<th>Sources of funds during first two months in town</th>
<th>Percentage of migrants using sources indicated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Savings</td>
<td>44</td>
</tr>
<tr>
<td>Aid from friends and relatives in town</td>
<td>44</td>
</tr>
<tr>
<td>Regular wage employment</td>
<td>29</td>
</tr>
<tr>
<td>Casual wage employment</td>
<td>14</td>
</tr>
<tr>
<td>Non-wage money income</td>
<td>6</td>
</tr>
<tr>
<td>Money sent from home</td>
<td>4</td>
</tr>
<tr>
<td>Government bursary</td>
<td>3</td>
</tr>
<tr>
<td>Yes to one or more of the above</td>
<td>84</td>
</tr>
</tbody>
</table>


The importance of own-account work as a point of entry to the urban labour market is determined by an examination of the means of support of current migrants during their first months in town. Eighty-four per cent relied on one or more of the seven sources of funds listed in Table III, ranked according to the proportion of migrants drawing on each. Only 6 per cent of new arrivals supported themselves even partially through some form of self-employment. If we exclude those who found a wage job within a month after arrival and those who come to town for other purposes such as education, the proportion of self-employed new arrivals is still only 11 per cent.

It is possible that new arrivals live off their savings or rely on aid from relatives because the probability of finding a high-wage job is greater for unemployed workers than for the self-employed. Once these sources of...

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1 Males are the basis of the inquiry because few females come to town to seek work (Sabot, 1977a).
support are no longer available, migrants may turn to self-employment as a means of prolonging their period of job search, using own-account work as a short-term source of income. In this case we would expect the greatest proportion of the current self-employed migrants to have arrived in town recently and to have been in their current occupation for a short time only. Table IV shows that only 6 per cent of all non-wage earners had

**TABLE IV**

_Distribution of migrant own-account workers by length of stay in town according to activity presently engaged in: urban areas of Tanzania, 1971_

<table>
<thead>
<tr>
<th>Length of stay in town</th>
<th>Type of activity</th>
<th>%</th>
<th>%</th>
<th>%</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Less than 6 months</td>
<td>6</td>
<td>9</td>
<td>37</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td>6 months to less than 1 year and 6 months</td>
<td>0</td>
<td>0</td>
<td>8</td>
<td>92</td>
</tr>
<tr>
<td></td>
<td>1 year and 6 months to 5 years and 6 months</td>
<td>0</td>
<td>0</td>
<td>17</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>More than 5 years and 6 months</td>
<td>0</td>
<td>0</td>
<td>22</td>
<td>65</td>
</tr>
</tbody>
</table>

- Street trading
- House rental
- Shopkeeping
- Transport
- Hotel, barkeeping
- Craft or manufacturing
- Cultivation
- Contracting (fundi)

| All migrant own-account workers | 6 | 8 | 26 | 60 |

a Fishing omitted because sample size is too small to yield reliable results at this level of disaggregation.

b Rows may not sum exactly to 100 due to rounding.


arrived in town within six months of the enumeration; an additional 8 per cent had been in town for six to eighteen months. Sixty per cent of all migrant own-account workers and no less than 50 per cent of each activity's participants had lived in town for over five and a half years. Similarly, Table V shows that only 15 per cent of the self-employed had worked in their activity for less than one year, and no less than 51 per cent of the participants in any one activity, and 68 per cent overall, had been engaged for three or more years. By comparison, 27 per cent of wage earners had been in their present job for less than one year and only 44 per cent for more than three years.

1 The apparently higher level of stability among non-wage earners may be partly due to their immunity to involuntary separation.
The expectation that the income of self-employed workers in urban areas will be uniformly low is based on the presumption that the non-wage sector, by virtue of its openness, is subject to downward pressures exerted by an excess supply of labour, from which the income of workers in the wage sector is protected. But we have shown that the sector is not homogeneous in this respect; a significant proportion of the self-employed are engaged in activities with barriers to entry, self-employment is not primarily a means of access to the wage segment of the urban labour market, and only

### Table V

_Distribution of migrant own-account workers by length of stay in activity according to activity presently engaged in: urban areas of Tanzania, 1971_

<table>
<thead>
<tr>
<th>Activitya</th>
<th>Length of stay in activityb</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Less than 1 year</td>
<td>1 year to less than 3 years</td>
<td>3 years and more</td>
<td></td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Street trading</td>
<td>24</td>
<td>25</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>House rental</td>
<td>10</td>
<td>11</td>
<td>79</td>
<td></td>
</tr>
<tr>
<td>Shopkeeping</td>
<td>24</td>
<td>24</td>
<td>53</td>
<td></td>
</tr>
<tr>
<td>Hotel, barkeeping</td>
<td>29</td>
<td>14</td>
<td>57</td>
<td></td>
</tr>
<tr>
<td>Craft or manufacturing</td>
<td>13</td>
<td>20</td>
<td>67</td>
<td></td>
</tr>
<tr>
<td>Contracting</td>
<td>9</td>
<td>21</td>
<td>71</td>
<td></td>
</tr>
<tr>
<td>All migrant own-account workers</td>
<td>15</td>
<td>17</td>
<td>68</td>
<td></td>
</tr>
</tbody>
</table>

*Fishing, cultivation and transport omitted either because sample size is too small, or non-response on this question is too high, to yield reliable results at this level of disaggregation.*

*Rows may not sum exactly to 100 due to rounding.*

*Source: NUMEIST 1971.*

A small proportion of new entrants rely on self-employment while seeking a wage job. The diversity in the nature of activities and the stability of workers in the sector suggests that, contrary to conventional expectations, there is considerable variation in earnings from self-employment.

Table VI reveals that 43 per cent of the self-employed earned at least Sh. 200 per month, while in 1971 the minimum wage was approximately Sh. 170. High incomes are not concentrated in one set of own-account activities and low incomes in another. Rather, there is a wide range of incomes in each activity. The activity sub-group with the distribution most skewed towards low incomes still has 23 per cent of its participants earning more than Sh. 200 per month. A comparison of the aggregate distributions

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1. The minimum wage varied among towns and sectors of employment.
### Table VI

Percentage distribution of own-account workers by monthly income according to type of activity, and percentage distribution of wage employees by monthly income: urban areas of Tanzania, 1971

<table>
<thead>
<tr>
<th>Type of activity</th>
<th>Less than Sh. 50</th>
<th>Sh. 50 to 99</th>
<th>Sh. 100 to 149</th>
<th>Sh. 150 to 199</th>
<th>Sh. 200 to 249</th>
<th>Sh. 250 to 499</th>
<th>Sh. 500 to 999</th>
<th>Sh. 1,000 and over</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street trading</td>
<td>16.9</td>
<td>17.9</td>
<td>18.8</td>
<td>13.9</td>
<td>7.9</td>
<td>14.9</td>
<td>5.9</td>
<td>4.0</td>
</tr>
<tr>
<td>House rental</td>
<td>22.2</td>
<td>16.0</td>
<td>21.0</td>
<td>17.3</td>
<td>7.4</td>
<td>6.2</td>
<td>3.7</td>
<td>6.2</td>
</tr>
<tr>
<td>Shopkeeping</td>
<td>9.1</td>
<td>12.7</td>
<td>5.5</td>
<td>9.1</td>
<td>7.3</td>
<td>10.9</td>
<td>10.9</td>
<td>34.5</td>
</tr>
<tr>
<td>Cultivation</td>
<td>52.0</td>
<td>10.0</td>
<td>..</td>
<td>5.3</td>
<td>15.8</td>
<td>10.6</td>
<td>5.3</td>
<td>..</td>
</tr>
<tr>
<td>Hotel, barkeeping</td>
<td>10.0</td>
<td>20.0</td>
<td>10.0</td>
<td>5.0</td>
<td>15.0</td>
<td>19.0</td>
<td>25.0</td>
<td>..</td>
</tr>
<tr>
<td>Crafts, manufacturing</td>
<td>5.6</td>
<td>16.9</td>
<td>15.5</td>
<td>11.3</td>
<td>14.1</td>
<td>23.9</td>
<td>2.8</td>
<td>9.9</td>
</tr>
<tr>
<td>Contracting (fundis)</td>
<td>14.3</td>
<td>14.3</td>
<td>7.2</td>
<td>0</td>
<td>25.0</td>
<td>32.2</td>
<td>..</td>
<td>7.1</td>
</tr>
<tr>
<td>All own-account workers</td>
<td>15.5</td>
<td>16.1</td>
<td>13.8</td>
<td>11.8</td>
<td>10.3</td>
<td>15.6</td>
<td>6.2</td>
<td>10.8</td>
</tr>
<tr>
<td>All persons in paid employment</td>
<td>1.4</td>
<td>3.5</td>
<td>3.6</td>
<td>18.7</td>
<td>20.1</td>
<td>33.4</td>
<td>12.2</td>
<td>7.3</td>
</tr>
</tbody>
</table>

*a* Fishing and transport omitted either because sample size is too small, or non-response on this question too high, to yield reliable results at this level of disaggregation.

*b* Rows may not sum exactly to 100 due to rounding.

**Source:** NUMEIST, 1971.
of self-employed and wage-employed incomes reveals that a higher proportion of the former group is in the highest, Sh. 1000 and over, income bracket. But there is also a greater proportion of own-account workers than wage employees earning a monthly income under Sh. 100. No less than 21 per cent of the participants of each activity and 32 per cent of the self-employed over all earned less than Sh. 100 per month. This compares with 26 per cent of casuals and 4.9 per cent of all wage earners earning under Sh. 100. It is evident that, in contrast to the distribution in a Walrasian marginal sector, the incomes in the own-account sector are not uniformly low. Fig. 1, which presents, for both wage and non-wage sectors, the joint cumulative distribution function of total income and income recipients confirms that there is substantial inequality in the distribution of non-wage incomes. Furthermore a comparison of the two Lorenz curves and their gini coefficients

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1 The high proportion of casuals earning such low incomes is explained by the relative ease with which minimum wage legislation is evaded by employers when daily paid workers are involved and by the lack of skill or other barriers to entry in this type of employment.
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reveals that the degree of inequality in the distribution of income is unambiguously greater in the non-wage than in the wage sector.¹

III. Visible and invisible underemployment

Visible underemployment, the number of employed persons working short hours because there is not enough work for them, is a conceptually sound component of surplus labour. In the urban wage sector it is estimated, however, that less than 5 per cent of the participants are visibly underemployed. Even among employees working less than 40 hours per week the proportion seeking additional work is equally low; most wage earners working short hours appear to be doing so voluntarily, perhaps because they are secondary earners with other non-economic commitments, or because they are primary earners who devote much of their time to other sources of income. Moreover, there is no evidence that visible underemployment contributes significantly to the explanation of low monthly wage incomes.

In the non-wage sector, where most low income urban workers are concentrated, the magnitude of visible underemployment can be determined conceptually. By definition, visible underemployment is a wage sector phenomenon only. Since there is no demand for labour per se in the own-account sector, it cannot constrain the number of hours worked.² If own-account workers work short hours they do so voluntarily, either because the return to an additional hour of work declines below the supply price of labour at a relatively low level of hours worked per week, or because time is devoted to job-search activities in the high-wage sector. In the former case, the worker has withdrawn from the labour force; it is only in the latter instance that he could be considered unemployed for part of the work week. Since the worker is not looking for more of the same work but for a different job, presumably at a higher income, however, he cannot be considered visibly underemployed. The phenomenon appears to be of little significance empirically in Tanzania (Sabot, 1977b).

The rate of invisible underemployment, the proportion of the labour force with an 'abnormally low' income despite long working hours is

¹ Adjusting for the impact of taxes, fringe benefits and for differences in the distribution of income between Africans and Asians does not alter significantly this finding. See Sabot (1977b).

² Joan Robinson (1936) uses a similar argument to support her contention that peasant farmers cannot experience visible underemployment as defined above. 'An economy consisting of self-supporting families each working their own land must always enjoy full employment, since each individual is free to work as long as he considers the real reward he obtains a sufficient inducement for his efforts.' Robinson's concept of full employment is not exclusive of the sort of disguised unemployment central to the analysis of dual economy models of growth. Even in a situation where time is allocated optimally from the point of view of the individual, there may be 'disguised unemployment' in the sense that some individuals receive an income in excess of the marginal product of their labour as a consequence of income-sharing arrangements within the household.
generally measured by applying a ‘poverty datum line’ (PDL) as an income criterion. Though different assumptions on prices, size of family, proportion of income actually spent on the goods and services deemed essential, and the degree of access to transfer payments contribute to significant variance in estimates made for the same place at the same time, the greatest problem with PDL estimates is the arbitrariness and subjectivity of judgements of minimum needs. Using the hourly urban minimum wage, originally established on the basis of a PDL, the estimated level of invisible underemployment varies from 22 per cent, assuming a 55-hour standard work week, to 41 per cent assuming a 40-hour standard, for all urban income recipients.¹ It is difficult, however, to interpret these estimates except in strictly descriptive terms. While the subjective costs of employed surplus labour, the loss of satisfaction which would have been derived from the output forgone as a consequence of leaving part of the labour force underutilized, may be of greater concern than its resource costs, it does not follow that it is possible to assess the magnitude of employed surplus labour by identifying workers with inadequate income. This would be to confuse the problem of poverty, a function of technology and productivity, of the distribution of wealth and earnings, as well as, perhaps, underemployment, with that of labour market imbalance. As Sen emphasizes ‘to identify unemployment with poverty seems to impoverish both notions since they relate to two somewhat different categories of thought’.²

IV. An allocative efficiency criterion for the measurement of urban surplus labour

Between 1948 and 1971 the population of the seven towns included in the Tanzania survey increased nearly four-fold. The average annual growth rate of 6 per cent is more than twice the rate of growth of the rural population over the same period.³ It is estimated that natural growth accounted for a little more than one-fourth of the urban increase. The contribution of migration to urban growth is also revealed in an examination of the residential history of the population of the seven towns. In 1971 fully 83 per cent of all adults were born somewhere other than their current town of residence. In this study an urban resident is classified as a migrant only if he came to town after the age of 13. Even when this narrower definition is applied, approximately two-thirds of the total adult population of the seven towns is comprised of migrants (Sabot, 1977a).

Since the level of rural–urban migration is a key determinant of the aggregate supply of urban labour, it follows that the problem of surplus

¹ See Sabot (1977a) for details of the estimation procedure.
² Sen (1975).
³ It is also more than twice the rate of growth of the same towns over the prior half-century. A discussion of the factors contributing to this increase is found in Sabot (1977b).
labour must be closely linked with the migration process. Recent theoretical work has suggested that migration proceeds in response to differences between rural incomes and urban expected earnings, defined as the product of the urban wage and the probability of finding an urban job, with urban unemployment acting as an equilibrating factor on such migration (Todaro, 1969). In an econometric study, designed primarily to test the hypothesis that, in conditions of open unemployment and inflexible urban wages, rural residents take account of employment probabilities as well as income differentials in estimating the returns to migration, the power of a human capital investment model to explain differentials in rates of migration among regional, urban, demographic, and educational sub-groups of the rural population was significantly increased by the addition of the ratio of employment growth in a four-month period to unemployment as an independent variable (Barnum and Sabot, 1977). The results of the study lend confirmation to the hypothesis in question and to its corollary that for some rural residents the move to town is income maximizing behaviour even though the probability of finding a high-wage job is less than 1.

In the theoretical work on the relationship between migration and urban labour market imbalance the existence of a low-income sector where incomes are flexible is either ignored, or it is assumed that the unemployed and self-employed can be aggregated without loss of precision in the analysis, an assumption which in the case of Tanzania we have shown to be empirically unfounded. A closer look at the role of the flexible income sector in the urban labour market yields the income criterion we are seeking for measuring employed surplus labour. The distribution of the national labour force among three sectors and its implications for the returns to labour in each sector, for the maximization of national output and for the definition of urban surplus labour, can be illustrated by means of Figs. 2 and 3.

The situation of ‘regular wage employment’ in the urban areas is depicted in Fig. 2(a). This sector is characterized by a mechanism of wage-determination which is not competitive. That is to say the interaction of supply and demand alone is insufficient to result in a wage that will ‘clear the market’. The supply curve of labour to the urban regular employment sector is labelled $S$; the supply of labour at higher wages is assumed to be mostly the consequence of migration from the rural sector. As in the Todaro model if a wage is established above the laissez-faire equilibrium level, urban jobs are ‘rationed’ among competing applicants by a sort of queueing mechanism implying that potential migrants must weigh the costs of waiting in the queue for urban jobs against the benefits of eventually receiving a higher income. This means that at wages above $w_0$ there is only a probability, not a certainty, of finding a job; and this is in contrast to the situation
FIG. 2

(a) Urban sector: regular employment
(b) Urban sector: own-account and casual employment
(c) Rural sector
below $w_0$. Thus, at $w_0$ the supply curve of labour becomes less elastic causing the curve to be kinked at its intersection with the demand curve. If the demand curve for labour remains fixed, the supply curve of labour is given by $S$. However, if the demand curve for labour shifts upwards to the right the labour supply curve will be as the dashed line $S'$ (a straightforward continuation of the supply curve below $w_0$).

The second urban sector, comprised of income earners who do not receive a wage and of wage earners hired and paid on a daily basis, is depicted in Fig. 2(b). Fig. 2(c) illustrates the rural sector, which we take as mainly consisting of small-scale agriculture. It is assumed that both the own-account and casual employment urban sector and also the rural sector are distinguished from the urban regular employment sector by the absence of institutional or other constraints on competitive income determination.$^2$

Consider an initial situation in which the wage in regular urban employment, $w_0$, is set at the level which clears the market so that all of the $L_0$ workers who offer themselves for employment are employed. Then given flexible wages in the other sectors $w_0 = r_0 = y_0$, and since income equals the marginal product of labour in this situation there is no possibility of obtaining any addition to total output simply by altering the disposition of the total labour force among the three sectors. Now consider an increase in the wage in urban regular employment as a consequence of the introduction of minimum wage or other labour legislation, or of the action of employers for whom increases in the wage rate induce proportionately greater increases in labour productivity (Jackson, 1972; Knight, 1967, and Sabot, 1977b). The supply of labour in this sector increases to $L_2$ and the number of regular-employment jobs declines to $L_1$.$^3$

The net result of the increase in the wage-rate being an ‘excess’ supply of labour in the urban sector of $L_1 L_2$.$^4$

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$^1$ This sector is not synonymous with the ‘informal sector’ as defined by the ILO, as a significant proportion of casual workers are included in government surveys of establishments. However, if the formal-informal sector dichotomy is based on a difference in the wage determination mechanism such that wages are ‘protected’ from market pressures in the former and ‘unprotected’ in the latter, then the flexible wage sector can be identified with the informal sector.

$^2$ Activities carried on in rural areas where the legal minimum wage applies, such as plantation agriculture and government employment, are thus excluded from the analysis.

$^3$ As drawn the elasticity of curve $A$ (the proportional change in labour output in the regular employment sector divided by the proportional change in marginal product) is less than unity. It has been shown (Corden and Findlay, 1975) that when the elasticity exceeds unity a rise in the wage, while still leading to excess supply, will entail a backward sloping supply curve and thus a decrease in the number of workers in the urban sector and an increase in rural sector labour and output.

$^4$ A rise in the urban real wage is likely to entail a change in the ‘terms of trade’ between the regular-employment sector and the other two sectors in favour of the former. This should cause an inward shift of the marginal product curve in the latter. Those shifts may be somewhat offset by decreases in output demand resulting from changes in the terms of trade and the increase in the urban population. The consequences of alterations
The proportion of this excess supply that remains in open unemployment and the proportion that enters the own-account and casual employment sector depends on the degree to which employment in the latter sector places a constraint on job-search behaviour in the regular-employment sector. At one extreme, participation in the own-account and casual sector is equivalent to participation in the rural sector in that employment entirely precludes effective seeking for urban jobs so that all of the excess supply remains in ‘open unemployment’. At the other extreme, participation in the own-account and casual-employment sector does not interfere at all with job search activity in the regular-employment sector and none of the excess supply of labour remains openly unemployed as the costs of waiting in the job queue can always be reduced by participation in the own-account and casual employment sector. The increase in the number of workers in the sector, \( N_0 - N_2 \), equal to the loss of employment in the regular sector plus the number of additional migrants, a total of \( L_1 L_2 \), pushes down monthly incomes from \( r_0 \) to \( r_1 \). Since the increase in the urban sector labour force, \( L_0 - L_2 \), which comes from the rural sector, raises incomes there only from \( Y_0 \) to \( Y_1 \), we obtain both a relatively high-income urban sector and a relatively low-income urban sector, with incomes in the rural sector falling in between. This configuration of \( w_1 \) and \( L_1 \), with \( r_1 \) and \( N_2 \), is ‘stable’ in that it can persist over a long period: the positive probability of obtaining a high-wage job retains the \( N_2 \) workers in the urban own-account and casual-employment sector despite the low remuneration there and despite the higher incomes obtainable in agriculture. It is economically quite ‘rational’ to work in this sector at an income below the rural opportunity cost of migration. In prevailing relative prices and in the pattern of sectoral demand interactions are peripheral to the main analysis and are ignored here.

1 In this case some of the \( L_0 L_2 \) labour attracted by the high-wage employment opportunities is drawn from the own-account work and casual employment sector as well as from the rural sector.

2 Furthermore, the level of unemployment does not equilibrate the flow of urban migrants. An increase in rural out-migration decreases incomes in the own-account and casual-employment sector relative to rural sector incomes, thus increasing the cost of job search per period. By increasing the level of ‘excess’ urban supply, migration also decreases the probability of finding a high-wage job, and this increases the number of periods necessary to wait in the low-income urban sector before finding a job in the regular-employment sector. Therefore expected total costs of job search rise with the increase in migration. (This raises an additional complication regarding the determinants of the slope of \( S \) relative to \( S' \). When participation in the own-account and casual-employment sector does not constrain, or only partially constrain, a person’s ability to look for a job in the sector of regular employment, the additional labour forthcoming from the countryside is likely to be greater than \( L_0 L_2 \) and the total excess supply will be greater than \( L_1 L_2 \). This is because, on the assumption that the disutility of work and job search are the same, income from casual or own-account employment reduces the costs of job search per period relative to the situation in which a job seeker must be unemployed, thus increasing the expected net returns to migration for a given rural-urban income differential and implying an increase in the slope of \( S \). In the case where employment places no constraint on job search, income in the
It is unlikely that either of these extreme cases—where the ratio of the probabilities of obtaining a high-wage job for the employed or the unemployed is either zero or one—applies in the urban areas of Tanzania. A significant proportion of the employed are engaged in active job search, suggesting that employment and job search are not entirely mutually exclusive activities, while the significant level of open unemployment is evidence that the perceived probability of finding a job is higher for the unemployed than for those in own-account or casual employment. In this case the excess supply of urban labour resulting from the high wage in the regular employment sector divides itself between open unemployment and low-income employment in the own-account and casual-employment sector.\(^1\)

In the situation that results from the increase in the urban wage it is clear that the urban unemployed could be more productively engaged in the agricultural sector; in addition, as long as employment does not entirely preclude job search, there is a proportion of workers in the own-account and casual-employment sector whose transfer to the rural sector would increase total output. The possibility that such a change in the allocation of the labour force could lead to increased over-all output provides both the rationale for calling the urban unemployed 'surplus' and also the basis of an income criterion for the measurement of employed surplus labour.

To define clearly this income criterion Fig. 3 clarifies the relationship between marginal product in the rural sector and the disposition of the national labour force. Marginal product is measured on the vertical axis and the number of workers measured on the horizontal axis, but, in contrast to Fig. 2(c), measurement is from right to left, from \(O'O\) and the rural marginal product of labour curve slopes downwards from right to left. The total labour force, \(OO'\), is divided between the urban areas (both sectors) and the rural areas. When a given number of workers, e.g. \(O'N_1\), are employed in the rural sector, the marginal product in that sector can be read from the corresponding position on the vertical axis according to curve \(C\).\(^2\) The marginal product curve of the own-account and casual-own-account and casual income sector declines to a level somewhat below \(x_1\) due to the addition of more workers while income in agriculture rises to a level somewhat above \(y_1\) with the migration of more workers to the urban sector.)

\(^1\) How precisely workers allocate themselves is determined by the ratio of the probabilities of obtaining a high-wage job for the employed and the unemployed. It can be demonstrated rigorously that the closer the ratio is to 1, the less own-account or casual employment constrains the effectiveness of job search, then, for a given rural-urban income differential: (a) the greater is the total excess supply further-earning; (b) the greater is the proportion of the total excess supply in own-account or casual employment; (c) the lower is the equilibrium rate of unemployment; (d) the lower is the equilibrium income level in the own-account and casual-labour sector, and (e) the greater is the gap between marginal product in that sector and in the rural sector. See Sabot (1977a) for a formal explication.

\(^2\) Alternatively we can say that when \(OO'\) minus the given number of workers present in
employment sector from Fig. 2(b) may be superimposed on the marginal product curve in the rural sector, making due allowance at the left-hand side of the diagram for the workers in urban regular employment (at wage \( w_1 \)); that is to say the measurement of labour in the own-account and casual employment sector starts from \( L_2 \) not from \( O \). The \( L_1 \) \( N_1 \) workers in Fig. 3 equals the \( N_1 \) workers in Fig. 2(b).\(^1\) As drawn it is obvious from

![Diagram](image)

**Fig. 3**

Fig. 3 that the transfer of \( N_1 \) \( N_2 \) workers from the urban own-account and casual-employment sector to the rural sector would yield a net gain to total output equal to the shaded area. Urban surplus labour, \( N_2 \) \( N_1 \), thus comprises workers whose marginal productivity is less than it would be in rural areas. That is to say, *urban surplus labour must be measured with respect to the marginal product of workers in agriculture.*\(^2\)

the urban sector, e.g. \( ON_1 \), is taken then the marginal product in the rural sector can be read according to curve \( C \).

\(^1\) Here we assume that own-account work or casual employment does not effectively constrain job search, so that the own-account and casual-employment sector acts as a sponge soaking up the excess supply of urban labour.

\(^2\) Only if the demand for labour in the regular employment sector is invariant with respect to the wage rate will \( N_1 \) \( N_2 \) in Fig. 3 equal \( L_2 \) \( L_2 \) in Fig. 2(a) and \( N_1 \) \( N_2 \) in 2(b)—the total excess supply of labour. If the wage increase decreases the demand for labour then the number of workers whose transfer from the own-account and casual-employment sector to the rural sector would increase total output is somewhat less than the total excess supply. This implies that the high urban wage imposes a cost on the economy not only by resulting in urban surplus labour as defined but also by leading to excessive capital intensity in
Curve $C'$ implies that with rural labour force $O'N_2$ there is disguised unemployment in the traditional sense that subject to qualifications regarding the indifference map between work and leisure (Berry and Soligo, 1968), labour can be withdrawn from the sector without any loss to output, marginal product = 0. From the above definition it is obvious that if curve $C'$ applies then there is no unique problem of urban employed surplus labour. No matter how low the income in the own-account and casual employment sector, if the marginal product of labour is greater than zero, allocative efficiency is increased and there is a net gain to total output associated with the movement of rural labour into the sector. In this situation the unemployed still constitute urban surplus labour, if transferring them to own-account or casual-employment would not reduce marginal productivity in that sector to zero.

The income criterion necessary for the measurement of employed surplus labour should now be clear. It is the marginal product prevailing in the rural sector with the existing disposition of the labour force. Due to diminishing marginal productivity, such a measure will yield an over-estimate of employed surplus labour. It treats the $B$ curve as being horizontal in the vicinity of $N_1$, but, in Africa at least, this may not be too far removed from reality. An estimate of the magnitude of urban employed surplus labour in Tanzania is presented in Table VII. The level of rural income per labour force member is the criterion applied to the distribution of urban income. Rural inter-regional income differentials, which persist in Tanzania partly because of intra-rural constraints on labour mobility are a potential source of bias in the measurement of employed surplus labour. This is eliminated by grouping the migrant population by region of origin. For each of the seventeen regional groups a separate income criterion is applied to measure surplus labour. The average of the regional criteria is used to measure the surplus only for non-migrants. Of the total urban labour force, 10.3 per cent is classified as employed surplus labour. As expected, given the differences in the distribution of income between wage earners and own-account workers the proportion of the latter group categorized as surplus labour is nearly four times that of the former. Adding the 9.9 per cent of the urban labour force that is openly unemployed production in the regular employment sector. Even if $N_1 N_2$ is transferred to the rural sector total output could be further increased by employing additional labour in the regular employment sector.

1 Alternatively rural disguised unemployment can be said to exist when the income of an additional worker exceeds rural marginal product. This can occur together with urban employed surplus labour if the marginal product in the own-account and casual-employment sector is not only lower than rural income at the margin but also lower than rural marginal product.

2 Because of the relatively large size of the wage sector the absolute number of surplus workers in that sector is only marginally less than in the non-wage sector.
yields an estimate of 20·2 per cent as the total proportion of the urban labour force that is surplus.¹

V. Conclusions

We have drawn on data from a national household survey—the design of which is more appropriate for the analysis of labour market phenomena in LDCs than conventional labour force surveys—to assess the magnitude of the excess supply of labour in Tanzania’s urban areas in 1971. Calculating

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<tr>
<th>Category</th>
<th>Proportion of the</th>
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<tr>
<td></td>
<td>sub-group %</td>
<td>urban labour force %</td>
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<tr>
<td>Employed surplus labour</td>
<td></td>
<td>10·3</td>
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<tr>
<td>Among wage earners</td>
<td>5·1</td>
<td></td>
</tr>
<tr>
<td>Among own-account workers</td>
<td>19·8</td>
<td></td>
</tr>
<tr>
<td>Unemployment</td>
<td>9·9</td>
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<tr>
<td>Total surplus labour</td>
<td></td>
<td>20·2</td>
</tr>
</tbody>
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¹ Weighted average of the proportions of the urban stocks of migrants from each of seventeen regions earning less than average product in rural region of origin and the proportion of non-migrants earning less than average rural product. 

rates of unemployment under alternative labour force participation criteria and definitions of employment in order to adjust for ‘hidden unemployment’ and for ‘hidden employment’, we arrived at a range of 8–12 per cent of the urban labour force, with 10 per cent as the best single estimate of the level of open unemployment. Assuming that some urban residents, given the prospect of eventually finding a high-wage job, will accept an urban income below what they could earn in the rural areas, the appropriate income criterion for the measurement of urban surplus labour is marginal product in the rural areas. Transferring this urban surplus labour—those earning less than rural marginal product—to the rural sector would increase total output. This criterion is preferable to conventional income criteria, which proved lacking in analytic justification, and to criteria based on the

¹ Variation among individuals in embodied human capital and hence in potential productivity, and in dependency status and access to alternative sources of income and hence in the deprivation they will suffer through unemployment or low-income employment, implies that an index of resource or welfare costs would require the urban labour surplus to be assessed at a relatively high level of disaggregation. This is beyond the scope of the current paper: hence the term aggregate magnitude of urban surplus labour refers to the proportion of the labour force comprising the problem as defined.
assumption of an identity between the self-employed and employed surplus labour which we have shown to be empirically unfounded. Although a rural income criterion yields a significantly lower estimate than do these other criteria, 10 per cent of the employed urban labour force is still estimated to be surplus.

Some qualifications are in order. If workers in the own-account and casual-employment sector do not differ in regard to degree of monopoly power they all receive an income equal to the productivity of the marginal worker and the rural marginal product criterion yields an overestimate as all of $ON_1$ in Fig. 2(b) or $L_1 N_1$ in Fig. 3 would be included as surplus. The dispersion of incomes among own-account workers indicates that differences in skills, levels of complementary physical capital, desirability of business locations, market information, and so forth contribute to varying degrees of monopoly power among sector participants. Nevertheless to the extent that there are segments of the urban labour market where workers have no monopoly power, one of which may be the market for casual labour, the estimate of employed surplus labour has an upward bias.

In addition, divergence between social and private marginal product can arise where there are income-sharing conventions in family enterprises or where distribution of custom among workers is random. If the group as a whole, family or non-family, has a degree of monopoly power in the market in which it is trading, and the average product of the group exceeds rural marginal product, then there will be an underestimate of the magnitude of employed surplus labour. If the group as a whole exercises little monopoly power, thus having an average product close to the sector marginal product and less than rural marginal product, there may be an overestimate of employed surplus labour. Furthermore, as there are no measures of rural marginal product in Tanzania, average rural product is used as the income criterion contributing to an upward bias in the measure of employed surplus labour. However, the gap between average product and marginal product is likely to be narrow in rural Tanzania, given the low capital/labour ratio and plentiful availability of land. Also the measure of employed surplus labour is not highly sensitive to small changes in the rural income criterion applied: rural incomes 10 per cent and 20 per cent lower only reduce the estimated magnitude of employed surplus labour to 9 per cent and 7.5 per cent respectively. Moreover, there is a strong presumption that the cost of living is somewhat higher in town than in the countryside; adjusting for the cost-of-living differentials would result in an increase in the estimate of employed surplus labour.

In conclusion, while better estimates of employed surplus labour must await further improvements in the data base, the allocative efficiency approach to the measurement of urban surplus labour provides the basis
for a rigorous separation between the problem of abnormally low urban incomes and the more general problem of poverty in less developed countries.

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