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BIBLIOGRAPHIC INPUT SHEET

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Batch 70

1. SUBJECT CLASSIFICATION

A. PRIMARY: Development and economics — DA00-0000-0000

B. SECONDARY: General

2. TITLE AND SUBTITLE
Some economic approaches to rural-urban migration studies

3. AUTHOR(S)
Osayimwese, Izevbuwa

4. DOCUMENT DATE: 1972

5. NUMBER OF PAGES: 18p.

6. ARC NUMBER: ARC

7. REFERENCE ORGANIZATION NAME AND ADDRESS
Mich.

8. SUPPLEMENTARY NOTES *(Sponsoring Organization, Publishers, Availability)*

9. ABSTRACT

10. CONTROL NUMBER
PN-AAE-978

11. PRICE OF DOCUMENT

12. DESCRIPTORS
Economic analysis
Manpower
Migrations
Rural workers

13. PROJECT NUMBER

14. CONTRACT NUMBER
CSD-2547 211(d)

15. TYPE OF DOCUMENT

AID 590-1 (4-74)

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Center for Research on
Economic Development
506 East Liberty Street
Ann Arbor, Mich. 48108 USA

CSD-2547 211(d)
Mich.
1972. PN-AAL 978

SOME ECONOMIC APPROACHES TO RURAL-URBAN MIGRATION STUDIES

By Izevbuwa Osayimwese*

This paper is a restricted survey of analytical approaches to economic studies of rural-urban migration. The survey is restricted in the sense that no attempt is made at anything near a comprehensive coverage of the multifarious contributions in the field. Instead, our purpose is to survey the subject under four major landmarks in the history of economic thought. To the best of our knowledge, this has not been done before, but beyond this novelty, however, a study of rural-urban migration offers its own interest.

Specifically, a study of some analytical aspects of rural-urban migration provides an opportunity for exposing some of the inadequacies of the classical theory of labor supply for short-run prediction and analysis of the behavior of unemployed persons. The traditional theory of labor supply relates quantity of labor to real wage rates. Thus the supply curve represents the maximum units of labor that will be forthcoming at any given real wage rate. For persons experiencing continued unemployment after investing in migration, the traditional labor supply curve may be quite irrelevant. The supply curve for such persons might well move with the passage of time unemployed, and more units of labor may be forthcoming at any given real wage rate than the classical supply curve would predict. The diagram below illustrates this point.

At real wage rate w_1, the maximum amount of labor forthcoming according to the classical scheme is q_1; at the same real wage rate w_1, the unemployed person may be willing to offer labor as much as $q_1^* < q_1$, but the classics would have considered q_1^* the maximum amount of labor obtainable at $w_1^* > w_1$. A reason for $q_1^* > q_1$ is than an unemployed person tends to be under greater pressures than an employed person to obtain a job. Moreover he is

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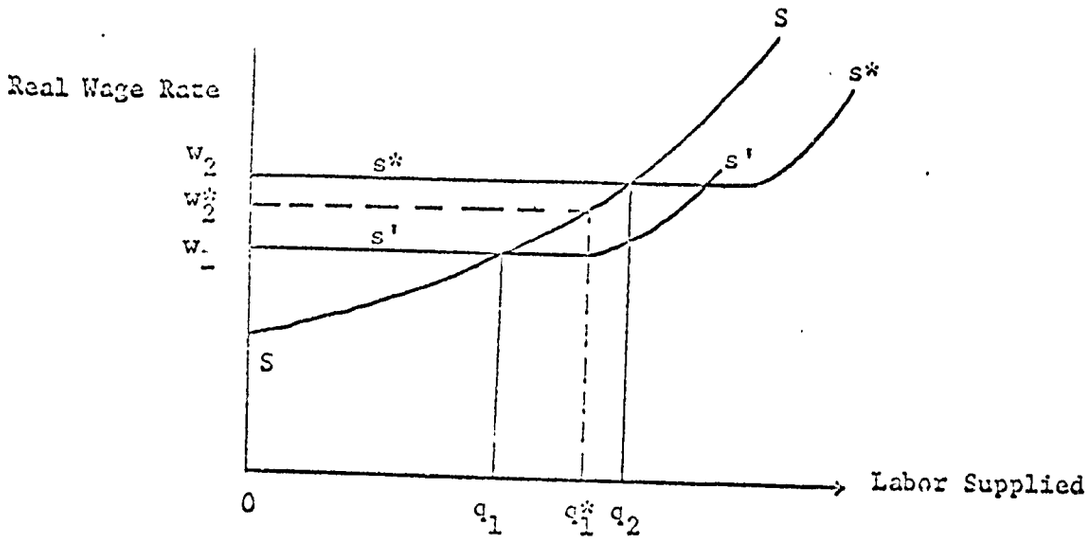

Figure 1

SS is the classical labor supply curve
s's' is the labor supply curve for the unemployed which moves to s*s* with the passage of time unemployed.

competing for jobs not only with other unemployed persons, but also with employed persons who may desire to change jobs. So $(q_1^* - q_1)$ may be regarded as a bribe to the prospective demander of labor.

A second reason for interest in rural-urban migration analysis is that it can provide a useful basis for a disaggregated approach to the Phillips' curve theory (Lipsey, 1960). Research on labor mobility by region (for example, rural-urban migration) may supply a model of the "disaggregated stochastic process" that is missing in to-date models of labor market interpretations of Phillips curve (Holts, 1970). When rural-urban migration causes the demand for and supply of labor in money terms to be out of equilibrium, the change in the money wage rate is proportional to unemployment. The wage-change process has three main components: wage change between jobs with worker unemployed; wage change between jobs without

worker unemployed, and wage change on the job. The first component is the one relevant to rural-urban migration and our main interest in this survey.

We may recall that Lipsey was the first economist of note to refer to the role of spatial elements in the Phillips' curve analysis, and his explanation for the presence of loops was based on: the convexity between the rates of wage inflation and the unemployment ratio in each region (industry and perhaps occupation); the regional (industrial, and occupational) dispersion of unemployment ratios. Finally, Archibald's (1970) example of wage dynamics in a closed two-sector model is even more demonstrative of the significance of spatial factors (such as rural-urban migration) in the labor market interpretation of the Phillips curve.

II

For the purpose of this paper the history of economic thought falls into four periods: the classical period, the Keynesian period, the period of neo-classical growth theorists, and finally the period of modern growth theorists. This section will accordingly be devoted to the consideration of rural-urban migration under the four heads.

A "Classical" Theory

A classical model of rural-urban migration is essentially a wage-differential model in which rural-urban migration is seen as a means of ironing out rural-urban wage differentials. A classical theory of rural-urban migration would be an integral part of classical economic theory, and accordingly have all its self-correcting mechanisms of equilibrium. In a sense, the supply of labor as may be induced by rural-urban migration always creates its own demand, and hence in the stylized version of classical theory there cannot be unemployment, that is, unemployment due to adjustment lags in the economic system. At once it seems evident that urban

unemployment, as we have it today in most LDCs, would be either absent in a classical model, or only a transient phenomenon. Indeed, the self-correcting mechanism in migration seemed to imply that rural-urban migration should be left free because any imposition of restrictions would rob the system of its adjustment mechanism.

Extending the classical reasoning Simon Kuznets (1957) has argued that at any point in time, the distribution of population reflects the distribution of economic opportunities, and migration is the connecting link. More recent influences of the classical position are reflected in the work of Brian Berry (1970) in which he suggested that rural-urban migration should be used to obtain an "optimally functioning spatial economy, or a functionally integrated hierarchy of communities." According to Kuznets rural-urban migration is claimed to involve a selectivity process which would promote the concentration of skills and talents in urban areas and eventually accelerate economic development. Like Berry, Kuznets is essentially arguing that the process of rural-urban migration will enhance the division of labor, specialization and functional integration. Indeed, rural-urban migration will increase total employment and output since labor will tend to move to places where its marginal product is highest.

The Conception of Optimum Population

Another trace of classical influence is discernible from the connection between rural-urban migration and the concept of optimum population. An optimum population may be defined as that population for which income per head (appropriately measured) is maximized. To any optimum population there will correspond an optimum ratio of rural to urban population, and at least one rate of rural-urban migration will be consistent with that ratio. There may be more than one equilibrium rate of rural-urban migration if other factors of production than labor change in quantity or productivity as migration occurs.

Rural-Urban Migration and Classical Trade Theory

Classical theory of rural-urban migration also has a close affinity to classical trade theory (Kleene, 1916). Rural-urban migration is the process by which the marginal products of labor are equalized, and, given all the flexibility and perfect information of classical theory, factor prices (wages) are equalized, allowing for the premium to cover migration cost. The supply price of urban industrial labor is determined by the wages paid to the unskilled labor plus a premium to cover migration expense plus a premium to induce him to invest in "human capital" and thus qualify for higher-grade jobs in the modern urban sector.[1] Implicit in the equalization of wage theory is the assumption of either a comparative statics framework or an instantaneous adjustment between two distinct equilibria. It should be noted that the effectiveness of migration in restoring equilibrium depends on the values of the "multipliers" induced by migration. It would appear that a classical theory of rural-urban migration at best assumes that the value of the "migration multiplier" is infinite, or at worst ignores multipliers.

In reality, migration tends to change the relative locational advantage of origins and destinations, and this may work to hamper the self-correcting mechanism in the system. In the next section we will conceptualize this change in locational advantage, and discuss a model whose basic premise is that free rural-urban migration may be cumulative rather than self-correcting.

A "Keynesian" Theory

In contrast to the equilibrium model of classical theory, a "Keynesian" theory of rural-urban migration is a disequilibrium model. This is to say that the system may settle for an "equilibrium" that is different from classical equilibrium in the sense that the labor market is not cleared,

presumably, because the institutionally determined minimum urban wage rate is higher than the free market wage rate. Rural-urban migration will stop when the expected urban wage rate equals rural daily earnings. Given the nature of the urban minimum wage rate and the assumption that prospective migrants are maximizers of expected utility, there is always urban unemployment. Such urban unemployment as Harris and Todaro (1970) have suggested tends to be cumulative because the elasticity of the urban labor force with respect to new urban jobs is greater than unity. Thus rural-urban migration continues even though urban population gains and urban employment may diverge.

As rural-urban migration takes place, the rural areas tend to be cumulatively less attractive in the sense that markets shrink and production falls. There is a negative multiplier effect in the rural area, with no positive multiplier effect, necessarily, in the urban area. Thus the consequences of migration, and its effectiveness in restoring equilibrium depend on the values of regional multipliers. Therefore some notion of these values of the multiplier seems a desirable prerequisite for a rational decision on whether to encourage a relocation of men or of expenditure (Archibald, 1967). In concluding this Section we may note that Leijonhuvud (1968) has argued that the Keynesian multiplier effect should be understood as a consequence of the way in which a system of imperfectly linked markets reacts to disequilibrium in one of them; this was not, however, a denial that the multipliers may not run their full course.

Until now we have been discussing wage-differential models of rural-urban migration. There is, however, a similar approach which differs from the wage-differential ones in that it is concerned with the utility from wages and not in wages per se.

A Utility-Differential Model

A utility-differential model of rural-urban migration will be conceptually more general than a wage-differential model. For one thing,

leisure and work can be introduced into a potential migrant's utility function, and a basis is obtainable for constructing an aggregative theory of rural-urban migration from a micro-economic foundation. The utility-differential model can best be illustrated by using Stiglitz's paper (1969).

In that paper he assumes that all individuals, urban or rural, have identical utility functions,

$$U^u (Y,L) = U^r (Y,L) = U (Y,L),$$

where Y is income and L is labor supplied per day. For the urban worker equilibrium is established when the marginal rate of substitution between work and leisure, $-(U_2/U_1)$, equals the daily urban income Y_u;

$U_1 = dU/dL$, where $Y = Y_u L$, and L is hours worked.

$U_2 = dU/d(T-L)$, where T = total daily labor endowment.

The rural worker's equilibrium is similarly established at:

$$-(U_2/U_1) = Y_r, \text{ where } Y_r = \text{rural wage rate}$$

Let Y_u^*, L_u^*, Y_r^*, L_r^*, represent the solution to the equilibrium conditions for each rural and urban worker. Then rural-urban migration will take place according as:

$$U (Y_u^*, L_u^*) - U (Y_r^*, L_r^*) \gtreqless 0;$$

In equilibrium, identity will hold, and the marginal migrant will be indifferent between living in the rural and urban area. This is the standard text-book theory of the static allocation of an individual's

time. The dynamic role of time is absent in this approach to rural-urban migration.

Time plays a key role in the migration process. The decision to migrate will depend largely on the migrant's judgement of his future prospects in both rural and urban centers; on his preference for satisfactions in the near future to those expected in the distant future as may be involved in moving to a new environment, a process which involves time and may entail investment in human capital (Bowles, 1970); on the probability of realizing his expectations, and his evaluation of risk. In order to make his expected distant future income comparable to near future income, he will consciously or unconsciously discount, and thus, reduce them to their present value.

Before introducing a model which represents some of these latter considerations, we will discuss rural-urban migration in neo-classical growth theory.

Neo-Classical Growth Theory and Rural-Urban Migration

Again, we shall illustrate this case with an example (Neher, 1971). Let us suppose, as Neher did, that there are two sectors: a rural agricultural sector in which average product exceeds marginal product of labor; secondly, a modern urban sector, with competitive factor and product markets, constant technology, a constant-returns-to-scale production, with positive but declining marginal products.

$$Y = L \cdot f(k), \quad f' > 0, \quad f'' < 0, \quad k = K/L$$

$$f = F(K/L, 1)$$

The marginal physical product of labor

$$MPP_L = w = f(k) - k \cdot f'(k), \qquad (1)$$

where w = wage rate per man, and the supply of labor to the urban sector

is infinitely elastic at the institutionally fixed wage rate. Let $k^* = k$ such that (1) is satisfied.

Suppose that the change in capital stock

$$\dot{K} = MPK_K \cdot K = rK$$

on the assumption that capitalists save everything and workers save nothing. Since the marginal product of capital,

$$MPP_K = f'(k)$$

$$\dot{K}/K = K^* = f'(k)$$

From (1), k is constant and the system stable when

$$w = w^* = f(k^*) - k^* \cdot f'(k^*) \qquad (2)$$

At w^*, employment will grow at a proportional rate equal to the return on capital. If the rate of natural increase in the modern sector, n_u, differs from the rate of return on capital, r, migration will occur between rural and urban sectors; the direction of the rural-urban migration will depend on whether $n_u \gtrless r$. We may recall that equality between the natural rate of growth and the warranted rate is a condition for steady-state solution in neo-classical growth models. Clearly, the rural sector in such models tends to be a passive absorber and supplier of labor to the modern urban sector. What is required is an "active" model of rural-urban migration which also embodies the time element referred to earlier; this will be the subject of the next section.

Rural-Urban Migration in Modern Growth Theory

Rural-urban migration plays a dynamic role in modern growth theory

in so-called dual economies. The interaction between pital accumulation, urban unemployment and urban drift comes out clearly in the works of Marglin (1966) and Dixit (1967). With the exception of our "Keynesian" theory of rural-urban migration, unemployment has not been given much attention in the preceeding theories. But the unemployment-migration relationship seems to be a most significant issue of economic interest in migration studies. The unemployment in question here is not that due to deficient aggregate demand, but is rather a supply-side phenomenon reflecting inadequate social capital. Rural-urban migration has two effects on the urban sector. One effect is to increase the pool of unemployed, we believe, because they lack appropriate skills. Also, the capital cost of training them to qualify for jobs is a barrier to their employment. But the presence of increasing urban unemployeds tends to depress the urban wage rate. On the assumption that only capitalists save and workers do not, capital accumulation may be accelerated because of the larger surplus of revenues over wages. Secondly, urban drift, by assumption, does not reduce rural production, but instead it forces agriculture to innovate and thereby produce more investible surplus. Thus modern growth theory would predict that in a dual economy, capital accumulation might be greater with some (or indeed considerable) unemployment than with little or no unemployment. Income distribution may be used later to compensate those unemployed. (Dobell and Ho, 1967).

In what follows we shall discuss another approach to rural-urban migration by modern growth theorists. This particular approach is due to Edwin Burton (1971).

Let us assume that a representative migrant has a utility function, U, with arguments C_1, C_2, where

C_1 = present consumption bundle implied by living in a rural sector.

C_2 = future consumption bundle associated with living in the urban sector.

We shall suppose that his total labor endowment is L, which may be divided between rural and urban jobs. Hence:

$$\bar{L} = L_1 + L_2; \quad L_2 \geq 0 \leq L_1 \tag{1}$$

$$\text{Let } z = \dot{L}_2 = -\dot{L}_1 \tag{2}$$

$$C_1 + C_2P = W_1L_1 + W_2L_2P - C(z) \tag{3}$$

where L_1, L_2 = labor supplied in rural and urban jobs, respectively.

P = price of urban consumption goods in terms of rural consumption goods.

W_1, W_2 = rural, urban wage rate respectively.

$C(z)$ = cost of migration, convex in z, the level of migration.

Our representative worker's problem is to maximize his discounted sum of instantaneous utilities, $\int_0^T U(C_1, C_2)e^{-\rho t}\,dt$, subject to the constraint system (1) - (3). ρ is the marginal rate of time preference. Put this way, we have a calculus of variations problem, for which the optimal paths for C_1, C_2 and z may be obtained, assuming existence of a solution.

The above model is reminiscent of the Fisherine two-period consumption theory. The decision to migrate from rural to urban centers is seen to be similar to the decision to consume in period two rather than in period one. Just as consumption in period two tends to be greater than consumption in period one in the Fisherine framework, urban consumption also tends to be greater than rural consumption because of the nature of returns to investment (in human capital) occasioned by rural-urban migration. Migration will stop when the time substitution rate between C_1 and C_2 equals the market exchange rate between urban consumption and rural consumption. The market exchange rate may depend on the proportional urban-rural wage rate differential. The idea is illustrated by the diagram below.

Rural-urban migration will stop where the slope of the budget equation, $M - C_1 - C_2(1 + i)^{-1} = 0$, (the variables are not related to Burton's) equals the slope of $U(C_1, C_2)$. $(1 + i)$ in Figure 2 is the rate at which

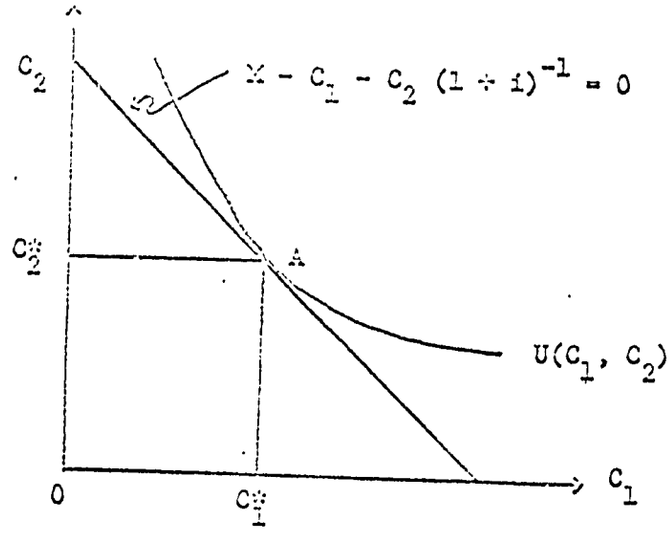

Figure 2

C_1 is exchanged for C_2, and i may be related to the proportional wage rate differential between urban and rural areas.

Given all the assumptions Burton made, along the optimal consumption and migration paths the proportional time rate of change in C_1 equals that in C_2. An obvious advantage of the Burton approach is that an interior solution such as point A in Figure 2 may occur. The rural-urban migration interpretation of this is that a migrant may optimally share his productive effort between rural and urban occupations. In other words, so-called "pendulum movements" may be optimal.

The beauty of Burton's approach to the problem is that analytical expressions can be obtained for the optimal paths for consumption and migration and the behavior of such paths can be analyzed. In contrast to Stiglitz's model mentioned earlier, the potential migrant's problem is seen as involving a choice of a consumption path which will be related to an optimal migration path via a budget constraint. In Stiglitz's model the migrant compares the marginal rate of substitution of work for leisure in the urban area with that in the rural area, an approach which, though theoretically valid, is less "attractive" than Burton's approach. For one thing Burton's approach seems to avoid the problem of directly valuing leisure in rural and urban areas. But it should be mentioned that Burton's model is a full employment model, in which an interesting feature of migration phenomenon, viz unemployment, is absent.

III

This is not a paper which requires a summary. Our task has been to trace rural-urban migration through the history of economic doctrine, and hopefully, our format has been simple enough to warrant no summary. Inevitably, most of the ideas in this paper are well known, but the perspective into which we have put them is perhaps novel.

Recently, the subject of rural-urban migration and planned resettlement has been surveyed by Gunnar Ollson (1971)[2], and his classification was in terms of micro and macro-migration models. In contrast to his macro level models, the micro models are distinguished by the fact that they are based on postulates about individual behavior. For example, the individual has a "life cycle approach to threshold formation" in the decision to migrate. The macro-level models are the kinds of models in which regional planners will be ultimately interested. It was not our purpose to discuss what Ollson called spatial macro-level models which comprise, among other things, the determination of the factors affecting migration. The determination of the factors affecting migration seems to be more of an empirical than analytical approach to rural-urban migration studies.

Finally, it is hoped we have indicated how "classical" economic theory and aspects of Keynesian reasoning could be applied to rural-urban migration. Recently, rural-urban migration problems have been studied within the framework of two-sector economic growth models, and variational techniques of mathematics have been variously applied, as in Burton's model. More recently, attempts have been made by this author (1972) to pose the rural-urban migration problem as an optimal control problem, and these attempts are articulated in a separate provisional paper. Needless to emphasize that the suitability of any single analytical approach or combination of approaches will depend on the goals of the inquirer.

NOTES

1. "Wages paid to unskilled labor" here refers to the average product of labor in the rural sector. Classical theory seems to have divided the economy into two sectors, viz., the urban sector and the rural sector. Thus wage determination in the urban sector depends on the average product of rural labor plus premia to cover migration, etc. The Classical division of the economy appears to be an unsatisfactory basis for theorizing about wage determination, particularly in LDCs. The urban sector is no longer adequately described in terms of one uniform sector; the urban sector should be divided into two sub-sectors, viz., the modern urban sector and the traditional urban sector. The traditional urban sector will include the urban unemployeds and many so-called underemployed persons in the elastic service sector. The traditional urban sector has been expanding in many LDCs during the past twenty-five years, and a satisfactory theory of wage determination should take account of this development.

Accordingly, urban wage rate may be determined in the following manner: Let I represent the modern urban sector, T, the traditional urban sector, and R, the rural sector. We postulate that:

$$(1) \quad W_I = aW_R + bW_T + P$$

or alternatively,

$$(2) \quad W_I = [\min (W_R, W_T)] + P,$$

where W Represents wage rate, P = the various premia mentioned earlier.

Relation (1) states that the wage rate in the modern urban sector is a weighted average of the wage rates (or average product, whichever applies) of the rural and traditional urban sectors, plus certain premia.

The second relation states that the modern sector's wage rate is a sum of the minimum between the rural wage rate and the traditional urban wage rate, and certain premia.

Note that some migration will generally be embodied in T. One advantage in relation (2) is that it leaves open the possibility that average product may be higher in the rural sector than in the traditional urban sector. Those who argue that the quality of life in traditional urban sector is generally inferior to the peace and quiet

in the rural sector will like relation (2) because of its "openness." The ultimate choice between the two relations is perhaps best determined empirically.

2. Gunnar Olsson has an excellent list of references.

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