

Review Article

Rural-Urban Migration and the Transition from Traditional to Modern Agriculture

*Per Lundborg**

Introduction

The seminal paper on intersectoral labor migration by Michael P. Todaro brings forth a set of rich analytical tools for further study in this area and exploration of some of the policy implications of migration. The paper by Per Lundborg is such an attempt. Instead of a two sector model as envisaged by Todaro, Lundborg considers a three sector two commodity model and traces migration from backward agriculture, to modern agriculture and modern manufacturing sector. He also elaborately discusses the policy implications of some of the policy issues such as, selective labor and capital subsidies and migration tax in a comparative static paradigm.


The purpose of this note is to delineate the salient feature of Todaro and Lundborg model outlining major differences and similarities and exploring the various determinants of intersectoral labor movement. Section I deals with the basic outfits of Lundborg model ; Section II elaborates on the findings of the Lundborg study, concluding remarks are given in Section III.

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Section I



The premise of Todaro model underscores the importance that in migration episode, one must consider not only the prevailing real income differential between urban and rural income as the driving force, instead one must consider the prospective migrants "probability" of finding a job in the modern sector. This is because of a large pool of unemployed and underemployed urban workers. Thus, income differential need to be adjusted for the probability of finding a job. Generally, the rural urban migration takes place in two stages. In the first stage, rural workers temporarily absorb in the so called "urban traditional sector" and in the second stage they ultimately get a modern sector job. These two stages unfold some important questions regarding the decision to migrate and related issues such as implications for accelerated industrial growth. Even if the prevailing rural urban income differential is not substantial ; from a long run perspective, a labor may migrate nevertheless, if he considers permanent income to be a dominant factor than present-wage income differential.

The paper by Lundborg differs both on account of sectoral composition and also on parametric values. The paper employs a three sector, two commodity model. The three sectors are a traditional agricultural sector, a modern agricultural sector and a manufacturing sector. Different production technology segregates the two agricultural sectors and there is explicit reference in the paper on spatial location of modern agricultural sector and backward agricultural sector. This is important because this distinction facilitates the explanation of labor migration between these two sectors. In the absence of a clear cut demarcation the basic premise of migration model breaks down.

Both the commercial and backward agricultural sectors produce food. The manufacturing sector produces goods, the nature of the goods however is not specified in the model. Thus in this three sector, two commodity settings, migration occur from the backward agricultural sector to the two commercial sectors. The paper goes beyond the theoretical insights of Todaro model and incorporates

policy issues such as labor and capital subsidies and implications of migration tax on urban labor workforce.

The migration behaviour along the lines of Todaro model is compatible because of primitive technology given by the production function of backward agricultural sector where labor is assumed to be the only input. A minimum wage in the urban areas gives incentives for labor in backward sector to migrate to the city and to queue for jobs in manufacturing and commercial agricultural sector. However, the concept of income differential among the sectors is not very explicit in the paper. The equilibrium is attained when expected wage in commercial sectors equal the actual wage in traditional agriculture. The unemployment rate in the modern sector falls if the backward sector wage approaches the commercial sector wage rate.

Section II

The paper discusses policy issues in a comparative static paradigm. The issues that were elaborately discussed are :

- Productivity increase in the backward sector
- General and sector specific labor subsidies
- General and sector specific capital subsidies
- A migration tax

Productivity increase in backward agriculture

The productivity increase in backward sector indicates a direct increase in the backward sector wage. This may reverse migration since the wage differential between the commercial sectors and the backward sector falls, a findings which corroborates the Todaro model. One indirect consequence of productivity may reduce the unemployment rate of manufacturing sector (in Todaro model, urban traditional sector).

Productivity increase in the backward sector lowers price of food in the short run. Since price in the long run is assumed constant, the output configuration in the two commercial sectors are altered, commercial agriculture contracts and manufacturing expands. Thus, migration in manufacturing sector can only take place when manufacturing sector production technology is labor intensive, otherwise labor supply in the backward sector increases. The welfare implication of the productivity increase is captured by a simple social welfare function. It is obvious that real income of the economy increases as productivity of the backward sector increases.

A subtle point that the author escapes is the alternative formulation of productivity increases in the commercial agricultural sector. Assuming commercial sector is labor intensive, a productivity increase may speed up transition process from traditional to modern agriculture with positive welfare implication since unemployment rate in the modern commercial sector may decline on the assumption that the minimum real wage index does not change.

General and sector specific labor subsidies

The total effect on labor subsidy may be decomposed into three effects :

- i. Factor market effect
- ii. Wage effect
- iii. Output demand effect.

First, a labor subsidy in commercial agricultural sector lowers labor's cost, raise labor demand and lowers unemployment. This causes migration form the backward sector i.e., labor supply falls and food output in backward agriculture falls. Since production function in commercial agriculture employs both capital and labor, a fall in labor price also has a positive effects on the use of capital input. Because of the interdependent nature of the inputs in the

production process, a labor subsidy implies increased use of capital inputs under the "normality condition" of input use. These two effects represent the factor market effect. Labor increase in commercial agriculture leads to an increase in use of capital forcing reallocation of capital from manufacturing sector, output in manufacturing sector falls. Output in backward agriculture sector falls and output rises in commercial agriculture.

A manufacturing sector labor subsidy results in the fall in wage costs and stimulates hiring of unemployed in the short run. The capital market effects of this subsidy are more complex. Because of the interdependence nature of inputs, adjustment take place in both factor markets. Since the wage cost fall, the rental rate on capital rises. So to restore equilibrium, allocation of capital from commercial agriculture to manufacturing is needed. Since, the wage rate of backward agriculture increases, this tends to restrain the labor outflow from backward agriculture sector. The factor market effect is negative.

A general labor subsidy augments output both in agriculture and manufacturing sectors and leads to an increased hiring in both the sectors. Assuming constancy in price, the relative output in both sectors unchanged. The relative factor intensities in both the manufacturing and commercial agriculture, however, is the major determinants to trace welfare effects. Now if the price decreases i.e., if commercial sector is labor intensive, the backward sector wage decreases and labor migrates to commercial sectors. Thus factor market effect and the wage effect move in the same direction.

General and Sector Specific Capital Subsidies

Capital subsidy in commercial agriculture results in capital cost fall in commercial sector in the short run but in the long run rental rate on capital will be left unchanged of the subsidy. Relative food output increases and food prices drops to restore a new equilibrium position. Thus, unemployment rate goes up. A capital subsidy in

commercial agriculture also encourage inflow of capital from manufacturing sector. Capital is reallocated out from manufacturing and this process continues until this rental rate on capital is equalised and identical to its original value. Thus with the increased use of capital in commercial sector, demand for labor rises and since the wage is fixed, this is met by hiring of unemployed.

On the other hand, a capital subsidy in manufacturing sector will induce reallocation of capital from commercial agriculture to manufacturing sector until rental rate on capital is identical in the two sectors. The commercial agriculture sector experiences an increase in capital cost and price rise may raise the backward sector wage rate. Thus, as a result of convergence of the wage rates, the commercial sector unemployment rate drops. The welfare effect is, however, indeterminate since a loss in commercial sector output cannot be weighed against an increase in manufacturing sector output and an increase in backward agriculture sector output.

A general capital subsidy to both sectors leaves capital costs unchanged and the output price unchanged. This will have no impact on labor demand or supply and therefore output/employment are unaffected by the capital subsidy.

Migration tax

The most interesting analysis of the paper is couched in terms of the consequence of a migration tax. An analogy of this discussion may also be found in Todaro analysis, where he pointed out the "equilibrium level of nonparticipation in the urban economy is as a function of rural supply push as it one of urban demand pull"

The welfare implication of this states is not very clear. Besides, the existence of wage differences can not help in halting the migration process as mentioned by author. Pragmatic policy considerations in

line with the Todaro analysis i.e. instead of subsidising housing in urban area investment may be initiated in rural area to stimulate supply push forces.

Section III

The title of this paper indicates two folds objectives.

- i. Rural urban migration
- ii. Transition from traditional to modern agriculture

The author tries to cover both these aspects but it appears that delineation of these two objectives and integration in a coherent mass lacks clarity in model equations. The model does not refer growth rate on modern sector output/employment. Since one of the components of the paper emphasises transition from traditional to modern agriculture, a parametric value on the growth rate of modern sector employment/output may furnish a guess/estimate of the time required for such a transition. Moreover, the nature of the manufacturing sector output warrants discussion in this transition process, since manufacturing sector producing agricultural machinery may complements the input supply in *the modern agriculture sector* and speed up the transition process.

The author tries to integrate an welfare index in his analysis to show the implications of various policy changes. But in many cases, he ends up with indeterminacy. For example, the welfare implication of migration tax as illustrated by output increase in manufacturing and agricultural sector is not so straight forward. As labor force start to move back, output in backward agricultural sector may fall if the labor absorption in backward agriculture sector is already saturated.

REFERENCES

1. Harris, J.R. and M.P. Todaro, 1970, "Migration, unemployment and development : A two sector analysis", *American Economic Review* : March, pp. 126-42.
2. Lundborg, Per, 1990, "Rural-urban migration and the transition from traditional to modern agriculture", *Journal of Development Economics* : 33, pp. 287-307.
3. Todaro M. "A model of labor migration in less developed countries", *American Economic Review* 1969, Vol. (March), pp. 138-148.