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ANALYSIS OF THE ECONOMY OF BURUNDI IN THE CONTEXT OF THE DUAL-ECONOMY MODELS

by Gérard NAHIMANA

P R E A M B U L E

L'article qui va suivre est un condensé d'une thèse que son auteur a présentée comme travail de fin d'études pour l'obtention du Master's degree (M.A.) en économie à l'Université de l'Etat de Pennsylvanie (Penn State) en septembre 1985.

Le lecteur francophone voudra bien comprendre pourquoi la traduction n'a pas été faite : d'une part l'appréhension de se trahir en traduisant ; d'autre part la conviction que l'on lit et comprend ici l'anglais aisément. Aussi, le CURDES voudrait de temps à autre fournir matière à réflexion à sa clientèle anglophone.

Le développement économique des pays les plus pauvres est une des questions les plus discutées de notre temps. Beaucoup de modèles ont été proposés pour essayer de saisir la nature et les causes de la pauvreté économique. Les modèles dits "dualistes" - dont la première élaboration est l'oeuvre du Professeur Arthur W. Lewis (1) dans les années 1950 - ont été abondamment utilisés pour étudier la structure des pays les moins développés.

L'objet de cet article est de se servir de ce cadre théorique pour analyser l'économie du Burundi. Après la présentation du modèle général proprement dit, l'étude du cas du Burundi nous permettra en quelque sorte de le tester, c'est-à-dire de voir dans quelle mesure le modèle est utilisable ou non. Les politiques économiques qui en découlent feront l'objet d'un autre article dans un prochain numéro des cahiers du CURDES.

I. INTRODUCTION

The problem of the economic development of today's less developed countries (LDCs) is one of the more widely discussed topics of our time. Scholars in various fields such as economics, politics, sociology, and engineering have held different views about the nature of underdevelopment and poverty, its causes and its remedies. It has now been recognized that the nature and remedies are neither quick nor easy. All kinds of theories have been suggested and implemented to promote growth and improve welfare. Since some of the models used - namely the growth models - are highly aggregated in the sense that no attempt has been made to distinguish between different sectors of the economy, e.g. agriculture and industry, the so-called "dual-economy" models are aimed at bridging this gap in studying the structure of LDCs' economies.

The purpose of this paper is to analyze the economy of Burundi in the context of the dual-economy framework.

After an overview of the two-sector models, the question to be addressed is whether or not the theoretical approach can be useful in the case of Burundi. As a matter of fact, the ultimate goal appears to be the ability to draw useful policy recommendations [2] as far as planning [3] and sectoral contributions to economic development are concerned.

II. THE TWO-SECTOR MODEL FRAMEWORK

Since economies of LDCs are regarded as far less homogeneous than those of DCs, it is sometimes argued that the case of LDCs should be analyzed in terms of "dual-economy" models. To understand better the nature of the relationship between agriculture and industry, economists began to design simple models to explain the key connections between the two sectors.

Afer a presentation of the two-sector models, the case of Burundi will be examined, using Burundi's specific features in order to find out how it fits or differs from the theoretical framework.

2.1. Review of the literature

The best kwown of the earlier models appeared in David Ricardo's The Principles of Political Economy and Taxation (1817). Britain in the early nineteenth century still had a large agricultural work force, and Ricardo felt that the industrial sector could draw away the surplus labor in the rural sector without normally causing a rise in wages in either the urban or rural areas.

The modern version of the two-sector labor-surplus model was first developed by W. Arthur Lewis (1955 ; 17). Surplus labor according to Lewis is defined as that part of the labor force that can be removed without reducing the total amount of output produced, even when the input of other factors remains constant. Lewis, like Ricardo before him, pays particular attention to the implications of surplus labor for the distribution of income. The relationship between industry and agriculture is more completely worked out in a version of the labor-surplus model developed by John Fei and Gustav Ranis (FR) (1964 ; 21).

Jorgenson (1967 ; 20) makes a frontal attack on the gap between theories of growth and theories of development [4] by preseinting a theory of development of a dual economy. He distinguishes between the modern (i.e., industrial) and the backward (i.e., agricultural) sector of the economy. Jorgenson argues that surplus in agriculture (food production net of consumption) releases labor to be employed in industry and the growth rate of industrial employment is given by the growth of the surplus.

The dual-economy models have been extended to include dynamic behavior. These models are fairly complex as they deal with dynamic optimization problems (see Dixit, 1968 ; 23).

In a general theory of growth in dual economies, Kelly et al. (1972 ; 28, p. 52) have tried to analyze the problems of transition and technological dualism in agricultural and industrial production, bias in technical progress, and difference in consumption patterns and migration.

However, many economists do not agree that a surplus of labor exists in today's developing nations, even in India and China. Those economists have developed an alternative two-sector model that is sometimes referred to as a "neoclassical model". Accordingly, population growth is not such a wholly negative phenomenon : an increase in population and labor in agriculture will itself raise farm output and any removal of labor from agriculture will cause farm output to fall. The increase in labor is much less of a drain on the food supply since it is able to produce much or all of its own requirements, and there is no surplus of labor that can be transferred at no cost to agricultural output (31, pp. 56-9).

2.2. Assumptions

Ricardo included two basic assumptions in his model that have played an important role in many two-sector models of the relationship between agriculture and industry ever since. First, he assumed that the agricultural sector was subject to diminishing returns and the reason was that crops required land and land was a fixed factor of production. Second, Ricardo put forward the concept that today goes under the name labor surplus.

Lewis assumed a dual economy : a modern exchange sector and an indigenous subsistence economy. Unlimited supplies of labor exist in the subsistence sector since the supply of labor is greater than the demand for labor at the subsistence wage, i.e., the marginal product of laborers (MPL) in the subsistence economy is negligible or zero. Thus, surplus labor can be used instead of capital in the creation of new industrial investment projects, or it can be channelled into nascent industries, which are labor intensive in their early stages. Labor must be encouraged to move to increase productivity in agriculture. When all the surplus labor in the subsistence sector has been attracted into the capitalist sector, wages in the subsistence sector will begin to rise, shifting the terms of trade in favor of agriculture, and causing wages in the capitalist sector to rise.

Since MPL is assumed to be equal to zero (Lewis and FR) ou MPL in the rural sector MPL in the industrial sector (Jorgenson), the transfer of labor from agriculture would not reduce output in the agricultural sector.

In the Jorgenson model, production in the agricultural sector is determined by land and labor and such a production function is subject to diminishing returns. In the modern sector, output is generated by labor and capital and the function is subject to constant returns to scale. In both the FR and Jorgenson models, it is implicitly assumed that technical progress would be of a labor-augmenting type.

Dixit assumes that che only activity which can be undertaken in the traditional sector is food production. In contradistinction to the Jorgenson model, Kelly et al. assume that both sectors use labor and capital and the exclusion of land in the agricultural production function is very surprising.

All writers on the dual economy models neglect the role of money and foreign trade as they assume a closed economy. The neoclassical assumptions of marginality and price clearing are implied. Finally, they all believe that only capitalists in the urban sector can save and it is assumed boldly that the capitalist's marginal propensity to save is close to one.

2.3. Predictions

Note that the Lewis and FR models predict a fall in capital-output ratio since it is assumed that technology will be capital-saving. Also given the assumption that capitalists save much of their income, the Lewis and FR models predict rising growth rates of output and employment as capital grows over time. In the Jorgenson model, growth rates of output and capital would be the same and employment in the modern sector would rise less rapidly than the rise in capital and output.

In sum, the predictions of the dualistic theories are threefold : (a) aggregate per capita income would increase ; (b) per capita rural income would remain fixed ; (c) the rate of population growth would be the same as the growth rate of agriculture (28, p. 56).

III. THE CASE OF BURUNDI

Since facts from most LDSs do not support the predictions of the two-sector models, the case of Burundi will be used to draw the similarities and the differences as well.

3.1. How Does Burundi Fit the Two-sector Models ?

Because Burundi's land resources are limited and because population growth, over the last decade, continued at the high rate of 2.1 % per year, Burundi is becoming a surplus-labor economy.

Land. Estimates made by ISABU [5], the Agricultural Research Institute, and the Ministry of Agriculture indicate a total of about 2.3 million hectares of land available for agricultural use, three-fourths of which are currently exploited. In regions of high population density, almost all land is in use. The available land reserves, found in regions of lesser population density, are estimated at 600,000 hectares, of which between 200,000 and 250,000 might be suitable for cultivation. The problem is that a considerable share of the potentially cultivable land is either of lower quality or located in the eastern lowlands which offer a less favorable climate.

In Burundi, traditional land tenure systems coexist with modern land laws. Technically speaking, all land belongs to the government. Traditional practice gives usufruct rights to people who cultivate the land on a permanent basis or make improvements to the property. Land rights can be inherited, given, leased, and even sold in some cases.

Labor. An average of 4.6 persons live on each small farm. The weighted average farm size is about 0.85 hectare or roughly two acres. Fragmentary evidence indicates that this average farm size has been declining [6].

Labor requirements are covered by the family, and because of the small farm size there are no labor shortages except in the paysannats (collective farms) where the average farm size is large (4 hectares of cultivable land). In general, empirical information on labor requirements of farms in different regions of the country is very scarce. Little is known about the manner in which farmers allocate time to crops, livestock, housekeeping, marketing and other activities.

Other inputs. Agricultural production is characterized by high labor intensity, use of rudimentary tools (hoe and machete) and mostly traditional methods. Use of mineral fertilizers is very limited, and farmers use organic fertilizers as available. Chemicals are used on coffee and cotton for insect control but rarely on other crops. Mechanized land preparation is limited to a few projects, and animal traction is largely unknown, although a few recent pilot projects in two plains have been very successful.

It is clear that these features of the Burundian economy with respect to agricultural inputs present some of the characterisics of a labor-surplus economy. Since the evidence shows that the average farm size has been declining a d the population density per sq. km has been increasing tremendously (it is today ranked the second highest in Africa) a surplus labor pool exis s. Furthermore, large amounts of that labor are underutilized. Much of i could be considered "desguised unemployment".

Importance of Agri ulture in promoting industrial growth. There is no doubt about the Burundian authorities' belief in the importance of agriculture, but their performance leaves much to be desired. According to the national income accounts, the average real growth rate of the sector has been less than population growth. Cash crops (coffee, cotton,

and tea) grew by nearly 3 % per year during 1978-82. The estimated increase in domestic food crops was 2.2 % per annum during the same period (12.p.33). However, what is most worrisome about the Burundian situation is that agricultural development tends to be more and more constrained by land availability and by the rapid degradation of agricultural soils due to high population pressure. Likewise, productivity in the rural sector is low because of poor soils, irregular rainfall and traditional cultivation methods, but adoption of modern agricultural techniques is hampered by the absence of practical training and the weight of tradition. Intensifying traditional food crop production will inevitably take considerable time, although it becomes more urgent every year. Research in Burundi has so far provided only some elements of the technical package required for increasing agricultural productivity in small holdings.

The limited agricultural infrastructure facilities and services provided by the government severely constrain the ability to reach the small farmer, implement projects and manage them efficiently once foreign assistance ends.

Morale and motivation of the extension staff of the Ministry of Agriculture are rather low, while the project-based agents who benefit from autonomous project units with assured financing appear somewhat more effective than their Ministry counterparts. The agronomes (commune-level agro-extension agents) receive insufficient training in practical field work, and often assume passive bureaucratic attitudes which they communicate to the assistants and moniteurs (low-level workers) they supervise (12, p. 45) [7].

Agriculture's role in economic development is central because that is how most of the people in Burundi make their living. For the vast number of farming families, whose members constitute the main agricultural work force, "agriculture is not merely an occupation or a source of income ; it is a way of life" (29, p. 293).

The Marketed Surplus. The essence of the dual-economy models is that for the improvement of the modern sector (i.e., non-agricultural) of the LDCs, it is imperative that a "surplus must be generated and it should persist to avoid any slipping back to the stationary state" (28, p.51).

Farmers in Burundi must not only produce enough to feed themselves, they must produce enough to feed the urban population as well. As the share of the urban population in the total rises, therefore, the productivity of farmers must also rise. An important issue here is how to raise agricultural productivity to achieve a higher rate of growth, that is, how to raise the "surplus" from agriculture to achieve a higher rate of capital formation.

Ghatak (1978, 28) examines the nature of the debate between different schools about the ways of mobilizing surplus for reinvestment and concludes that Western economists have tended to ignore or seriously underestimate the importance of an agricultural surplus both in the earlier economic history of today's developed countries and in those countries which still remain at or near the bare subsistence level of food consumption. However, recently, some have recognized its importance (Nicholls, 1963 ; Owen, 1966 ; Khusro, 1967) (28, p. 99) and it is now argued that the size of surplus is crucially related to the size of capital formation.

Defining marketed surplus as the difference between total food production and total food consumption, it may be argued that if per capita consumption remains fixed, the surplus could be mobilized for real capital formation.

In order to achieve the objectives : (a) to transfer marketed surplus ; and (b) to collect savings on the agricultural population, the government may impose taxes or levies or try to persuade peasants to save more. Alternatively, the terms of trade, i.e., the ratio of agricultural prices to industrial prices, could be changed against agriculture through price control, taxation and state trading [8].

However, those policies have limitations due to the farmers' reactions. For example, it is plausible to think that when the surplus agricultural labor is transferred to the nonagricultural sector, those left behind in the agricultural sector will consume more of their own produce than they did previously because they might be feeling better off. This may reduce the marketed surplus. As the terms of trade go against agriculture, a farmer might decide not to sell as much as he might have sold before any worsening of the terms of trade. Hence, the strength of the savings policy depends upon the compulsion under which the peasant should sell part of his production.

Both Yotopoulos and Nugent (1976) and Ghatak (1978) provide models to analyze the problem of mobilizing surplus from agriculture from the point of view of farmer's utility maximization. In the former, the supply of labor has served as the link between the consumption decisions of the family and the production decisions of the household. Contrary to the existing models, the latter predicts that if the terms of trade are moved in favor of agriculture, the surplus will rise rather than fall as long as the farmers'consumption of agricultural goods remains fairly stable and the farmers' marginal utility of urban goods is high (.., p. 106).

Accordingly, it is conceivable that a relative fall in the price of industrial goods may induce the farmer to sell more in the market. Indeed, it may be noted here that the policy for mobilizing the surplus by keeping the agricultural price rather low has repeatedly failed in many developing countries.

Industrialization as a Development Priority. From the Industrial Revolution until the present, the dominant criterion for development has been the rise in per-capita income brought about largely by industrialization. Dual-economy writers favor industrial investment as a development priority, and their arguments are based on the observation that industrial growth accompanies development. Industry-first advocates suggest that manufacturing is a leading sector. because it stimulates investments in the other sectors as well.

Burundi is presently executing its Fourth Development Plan (1983-87) which accords priority to the development of manufacturing industries. Over the period 1977-82, manufacturing expanded at an average rate of 13 % per year in real terms. Part of this growth was due to the start of production of new enterprises, such as plastic bags, textiles, cigarettes and matches. The value of manufacturing production (including artisan production) grew at an average annual rate of 4 % in real terms between 1978 and 1982, reaching 10 % of GDP in 1982. There are fewer than a hundred manufacturing establishments of any size in Burundi, most of which are located in the nation's capital, and an unknown number of very small and artisan operations. Most firms process agricultural commodities or make consumer products which substitute for imports.

Manufacturing Labor. In the two-sector models, the surplus labor consists of unskilled workers. The general educational level of manufacturing labor in Burundi is very low as can be seen in Table 1 below.

The situation reflects, to a certain extent, the acute shortage of skilled personnel in Burundi ; but what is more worrisome is the apparent inability of manufacturers to attract the skilled manpower available in the country. Only 8 % of Burundi's skilled labor works in manufacturing, as compared to 22 % in construction, 19 % in commerce, and 13 % in agriculture and banking.

Table 1 : Level of Formal Education in Manufacturing, 1980.

		%
University Graduates		1.5
Secondary Education + less than 4 years		
Post High School Training		1.0
High School Graduates		0.9
Some Secondary Education		10.5
Primary Education		22.7
Some Primary Education		29.6
Illiterates		33.8
Total		100.0
of which :	Technical Training (all levels)	(3.3)
	Economics and Administration (all levels)	(1.0)
	Other	(95.7)

Source : La Situation de 1'Emploi en 1980, Revue de Statistique du Travail, Ministère des Affaires Sociales et du Travail, Burundi. December 1981.

Document of the World Bank. Burundi Manufacturing Industry

Wage and Salary Policies. The labor-surplus models deal with the concept of a minimum wage, also sometimes called an "institutionaly fixed wage" to contrast it with wages determined by market forces. On the contrary, in the neoclassical model, the MP_L never falls to a minimum subsistence level so there is no subsistence or officially fixed pay. Accordingly, wages in the model are instead always determined by the MP_L in agriculture.

The case of Burundi conforms to the former as far as wages are concerned. The government fixes minimum wages and salaries for all levels of skill in the public and private sectors. The present range of minimum salaries dates from May 1982, when they were raised from the levels set in June 1977 (Table 2).

While unskilled workers generally receive the minimum wage throughout the public and private sectors, qualified labor is generally paid in excess of the legal minimum, particularly in the private sector. All employees are entitled to a housing allowance, and annual salary increments of at least 2 % are normally granted to reward length of service.

With wages and salaries accounting for about 20 % of production costs in manufacturing, policies that raise the cost of labor may have some impact on employment. The minimum wage legislation is not thought to have had much effect on employment, given its decline in real terms, but the payroll tax, by making labor more expensive, may have discouraged its use and favored small firms as the tax rate rises with the size of the payroll.

Table 2 : Minimum Salary by Level of Skill as of May 1, 1982 1/

	Minimum per day		Salary per month		Housing allowance	
	FBu	US$ 2/	FBu	US$ 2/	FBu	US$ 2/
Unskilled - normal	140	1.2	3,500	29.6)		
heavy	154	1.3	3,850	32.5)	600	5.1
specialized	170	1.4	4,250	35.9)		
Semi-skilled - normal	240	2.0	6,000	50.7)		
heavy	276	2.3	6,900	58.3)	1,000	8.4
specialized	294	2.5	7,350	62.1)		
Skilled - normal	351	3,0	8,775	74.1)		
heavy	403	3.4	10,075	85.1)	1,350	11.4
Highly skilled	-	-	15,625	132.0	1.875	15.8
Semi-Professionals (Agents de Maîtrise)	-	-	21,600	182.4	7.200	60.8
Professionals	-	-	30,000	253.4	12,000	101.4

Source : Ordonnance Ministérielle of May 5, 1982.

1/ In addition, a monthly family allowance is payable of FBu 300 (US$ 2.5) for a wife/husband and FBu 150 (US$ 1.3) for each child.

2/ US $ 1 = FBu 118.4

3.2. How Does Burundi Differ ?

In many ways, the case of Burundi does not support some of the expectations or predictions of the dual-economy theorists. This section seeks to investigate how and to what extent the features of the economy of Burundi do not fit the two-sector model framework.

Population growth. Unlike the neoclassical view, there is little doubt that rapid population growth in Burundi is a serious burden on efforts to generate sustained increase in per capita product. Generally speaking and according to McNicoll (1984 ; 15) [9] the evidence suggests that economies of scale in production and infrastructure yielded by population size are modest and only garnered in the long-term.

Under the conditions existing in most poor countries, rapid population growth slows, sometimes drastically, the absorption of the bulk of the population into the modern, high-productivity economy. Rapid population growth imposes not only obvious costs in investment needed to maintain capital per head, but also considerable new organizational demands on a society, and constricts what is achievable by economic development in terms of individual wealth and amenities.

Despite offical support for "birth spacing" in Burundi, efforts in the population field have been limited to assessment of the current situation. An important aspect of demographic behavior in Burundi is that the average rural family wants more children than it currently has (eight as opposed to six). In addition, between one-half and three-fourths of the population profess non knowledge of contraceptive methods.

The fact that the rate of population growth of 2.1 % in the last decade is far higher than the average annual growth rate of agriculture of 0.9 % during the Third-Five-Year Plan (1978-82) shows how some of the predictions of the dualistic theories do not hold in the case of Burundi.

Price controls and protection [10] Lewis predicts that when all the surplus labor in the subsistence sector has been attracted into the capitalist sector, wages will begin to rise in agriculture and in industry as well. Likewise, the neoclassical assumption of the price-clearing mechanism implies an automatic tendency for prices to adjust to exogenous shocks.

However, Burundi planners believe in price controls and protectionism in both sectors.

Brown's hypothesis in his paper "Agricultural Pricing Policies in Developing Countries" (1978) is that agricultural production, income distribution, and economic growth would all benefit from reduction or elimination of "distortions" that reduce agriculture's domestic terms of trade. By distortions, he means "government policies which change prices from what they would be in a free market with no control" (30, p. 240). Accordingly, price incentives can cause farmers to use improved seeds, along with more fertilizer, pesticides, and other purchased inputs, to adopt improved farming practices, and to apply more family or hired labor.

Equally in Burundi, low prices for food and other farm products are politically popular on the theory that they increase real incomes and employment of the urban poor, and that the only losers are large farmers. There is a high cost attached to such low prices, however, if their effect is to retard cost-reducing investment and innovation in agriculture. Price and production controls that are intended to provide low-cost food to poor urban groups also tend to divert production away from those cheaper food crops [11].

In Burundi's industry, the import licensing system protects local manufacturers from foreign competition. All imports require a licence from the Central Bank and this is not granted if there is a local manufacturer able to satisfy the domestic market. If local demand is not met by local production, an import licence is issued but only to the extent judged necessary to fill the gap.

In such a protective environment, the government controls prices to prevent producers and traders from making what it considers to be excessive profits. All goods require price approval by the Ministry of Commerce and Industry. Prices are set on a "cost-plus" basis, with manufacturers receiving a net profit margin of 10 % to 20 %. Gross wholesale and retail mark-ups are also set for imported products and vary between 15 % and 30 %. The measure has probably had some success in reducing profit margins in a few cases. However, as the instructions given to manufacturers do not specify at what level of capacity utilization the prices should be calculated, the system actually allows firms operating at very low capacity to pass on all the costs and ensures them a safe and adequate return.

As a mean of protecting domestic manufacturing, tariffs are of little relevance as long as imports of competing products are strictly controlled or prohibited. They, nevertheless, serve to alleviate the impact of any remaining foreign competition as imports competing with domestic products have high import duties, generally in the range of 50 % to 150 %.

There is an Investment Code (3) which provides financial incentives to potential investors. However, compared to other industrial policies, the effect of the code is thought to be limited.

Farmers' Incentives [12]. In the dual-economy models, the so-called traditional noncapitalist agricultural sector is supposed to be unresponsive to economic incentives. Surprisingly, almost all the empirical evidence available at present suggests that farmers in LDCs respond to price incentives in a way which is very similar to the response that one finds in developed countries (28, p. 55) [13]. Furthermore, the theory that only the capitalists in the urban sector can save is questionable (Bergan, 1967) (28, p. 56). Nearly all studies show high marginal saving rates among even poor farmers. Thus, if prices were higher, an important part of the additional income accruing to farmers is likely to result in greater savings and investment.

If the Burundian farmer can have a reasonable and reliable access to credit, fertilizer, water, crop information and marketing facilities ; if he recieves a fair market price for his output, and if he can feel secure that he and his family will be the primary beneficiaries of any improvements, then there is no reason to assume that the traditional farmer will not respond to economic incentives and new opportunities to improve his standard of living.

Agricultural and capitalist surplus. Jorgenson's dual-economy model suggests that agricultural surplus must be generated if industrial growth is to occur. That logic does not work in the present-day Burundian economy because insufficient rainfall in 1983 decreased agricultural production by 30 %. Due to agricultural pricing, the marketed surplus is not significant since prices of food are set very low.

Given the linkages between agricultural growth and industrial expansion in poor countries, if a section of the profit made by the capitalists is not devoted to agricultural development, the process of industrialization would be jeopardized. In the case of Burundi, much of the capitalist surplus is not reinvested in the production cycle. Due to facilities guaranteed by the Investment Code, remittances by foreigners could be considerable. Also, because of lack of local entrepreneurship, investors are more interested in speculative activities than in productive ones.

Biased technology. According to the dual-economy theorists, particularly Jorgenson, technology will be, if not neutral, labor-intensive. The prices of labor and capital faced by modern-sector firms in Burundi are actually distorted in ways that make capital artificially cheap relative to labor. Since Burundi maintains legal ceillings on interest rates, capital equipment is cheaper for those preferred customers who can obtain the credit necessary to buy it. The distortion can inhibit labor absorption at several levels. An important point for Burundi planners is to look for technology that complements labor rather than substitutes for it since investments tend to use capital more intensively than labor.

Employment [14]. The formulation of the surplus-labor hypothesis led to the prescription of a strategy for development based on the transfer of surplus labor from the traditional to the modern sector at a constant (and low) real wage.

The experience of LDCs during the last three decades suggests that surplus labor, as a development strategy, has foundered on two problems. First, there is no surplus labor that can be transferred from agriculture at no loss of output. Second, development has not been handicapped by the lack of additional workers for the modern sector. If anything, the serious problem is how to find employment for increasing numbers of unemployed.

With the diminishing supply of arable land per capita and few mineral resources, Burundi's development planners believe that the country is forced into industrial development to provide employment for its rapidly growing population. Hence, the Fourth Development Plan (1983-1987) accords priority to the development of manufacturing industries, and the planners project that, by 1987, 6,300 new jobs will be created in the sector. However, between 1977 and 1982, only an estimated 2,360 jobs were created in manufacturing at a cost of US $ 41,000.

In conclusion, unlike Lewis, one needs to bear in mind that labor moves seasonally and, more important, transfer of labor is not smooth or costless : induced investment in terms of urban infrastructure, decrease in agricultural production and shortage of male workers on land can entail very high.

IV. CONCLUSION

The main preoccupation of the literature of the 1950s, the classical theory of labor surplus, was with meeting the need for additional manpower in the nonagricultural sector of a developing economy. Since labor was thought to have been employed to the point that its marginal product was zero, it was believed that agricultural labor could be transferred to the modern sector without any significant loss in agricultural output.

The neoclassical literature on labor surplus that developed in the 1960s abandoned the assumptions of zero marginal product and of unlimited supplies of labor. It focused instead on the divergence in wage rates and marginal products, between agricultural and nonagricultural employments, which were viewed as evidence of a dualistic disequilibrium (26, p. 198). Yet it again advocated transfers of labor out of agriculture for initiating development in the modern sector and emphasized the need to restore global optimality of resource utilization in the two sectors, thus eliminating dualism.

More recently, economists have been gradually coming to the conclusion that the real issue is not how to fill the need for additional workers in the modern sector but rather how and where productive opportunities for employing the surplus and unemployed labor can be found (26, p. 199).

Since Burundi is a surplus-labor economy, it does fit to some extent the two-sector framework. Consequently, labor is much more abundant than land, and since small farmers cultivate the land more intensively than large farmers, the analysis advocates the use of a system which maximizes output per acre, rather than output per head. The case of Burundi strongly supports the need to develop agriculture in order to release a marketed surplus. If industry is to develop successfully, simultaneous efforts must be made to ensure that agriculture grows fast enough to feed workers in both the rural and urban sectors at even higher levels of consumption and to prevent the terms of trade from turning sharply against industry. Burundi is in the process of transition from subsistence to mixed farming. Subsistence agriculture is a highly risky and uncertain venture. The main motivating force in the peasant's life may be the maximization, not of income, but rather of his family's chances of survival. However, a great accumulation of evidence suggests that peasant farmers do act rationally and are responsive to economic incentives, and institutional obstacles to small farmer innovation are, therefore, essential requirements of agricultural and rural development. For the case of Burundi, the surplus labor should not be encouraged to move to the

city but rather be trained to increase productivity in the handicrafts and in the small-scale activities in agriculture and in manufacturing as well.

However, the two-sector analysis does show some important contradictions as far as the expectations of the dualistic theories are concerned. Many of the expectations do not hold due to factor distortions, price controls and biased technology.

FOOTNOTES

1. Arthur W. Lewis, Prix Nobel d'Economie en 1979 en tant qu'économiste du développement, auteur de nombreux ouvrages sur la croissance économique et la planification du développement, enseigne l'économie à l'Université de Princeton (U.S.A.).

2. The analysis of the Burundian economy in the context of the dual economy model suggests some policy recommendations which will be discussed in a future article.

3. Matata, S. examines the role of planning and elaborates an excellent Framework for constructing an input-output table for Burundi with suggested applications in macro-planning, using data of 1975, thesis presented to the Department of Economics at Western Illinois University, December 1982.

4. In the theory of development, emphasis is laid on the balance between capital accumulation and the growth of population, each adjusting to the other. In the theory of growth, the balance between investment and saving is all-important and the growth of population is treated as constant.

5. See ISABU (Institut des Sciences Agronomiques du Burundi) report, "Contribution à la Connaissance des Régions Naturelles du Burundi", October 1981 ; and the Planning Ministry report, "Essai de Typologie des Exploitations Agricoles," September 1981.

6. Fragmentation of land results usually from a system of inheritance which allows each of the farmers'sons (or daughters) to receive a piece of the farm. For a complete analysis of the fragmentation in the countryside, see W. Arthur Lewis, Theory of Economic Growth, ninth printing, George Allen & Unwin Ltd., London, 1970, especially in his treatment of "The Organization of agriculture," pp. 120-136.

7. A study by Hilary Perraton, et al. helps us to understand why Government agents in agriculture have problems. The title is Basic Education and Agricultural Extension. Costs, Effects and Alternatives. World Bank Staff Papers, No. 564, April 1983. "Studies of the internal efficiency of agricultural extension services have generally produced critical findings. Extension agents have often conducted only a minority of farmers and have often contacted only a minority of farmers and have tended to contact those who are richer and better educated." The main reasons are : the ratio of agents to farmers ; the inadequate training of extension agents ; their pay.

8. Originally advocated by Preobrazhensky (1965), the method of turning the terms of trade against agriculture gained considerable favor in the Soviet Union in the twenties.

9. See Geoffrey Mc Nicoll in "Population Growth Effects on the Economy," op. cit., pp. 28-65. It is also Cassen's (1976) conclusion in his classic survey of the population and development literature "Population and Development : A Survey, "World Development 4 : pp. 785-830.

10. See an attempt made by Balassa, in Litte, Scitovsky and Scott, op. cit., p. 341, to measure the cost of protection in LDCs. The lessons of the depression of the thirties, World War II and the economic history of many rich countries have prompted a significant number of LDCs to build up a protected economy by imposing tariffs, controls and quotas (28, p. 167).

In the case of Burundi, the ordinary protection by tariff, taxes and quantitative restrictions is reinforced by the country's land-locked position and by the relative inefficiency of the trade system (expensive suppliers and forwarding agencies, high profit margin and operation fees). See the following papers by Josef Hunkeler, a former professor of economics at the University of Burundi and also a

former import planning and procedures advisor at the Ministry of Commerce and Industry :

(i) "L'enclavement du Burundi-quelques réflexions concernant la structure et les coûts à l'importation" Bujumbura, Faculté des Sciences Economiques et Administratives, Décembre 1978 ;

(ii) "Le tarif des douanes à l'importation du Burundi (édition 1979). Analyse et commentaires", Bujumbura, Ministère du Commerce et de l'Industrie, Septembre, 1984 ; and

(iii) "Industrialisation et protection. Quelques réflexions théoriques," Bujumbura, Ministère du Commerce et de l'Industrie, Février, 1985.

11. See examples of that diversion in Brown's paper, op. cit., p. 243. In Egypt, farmers have increasingly diverted land, fertilizer, and other inputs from growing wheat, maize, rice, and cotton - for which they are given quotas - to growing fruits, vegetables and livestock, which are not price-controlled.

In Kenya, price ceillings on meat and maize transfer income from low-income herdsmen and farmers for the benefit of middle - and upper - income urban dwellers.

12. As far as farmers' incentives are concerned, the case of China is a good example. See for example Kenneth R. Walker's article "Chinese Agriculture During the Period of readjustment, 1978-83", in The China Quarterly, No. 100 of December 1984, p. 785 : "Apart from reducing the taxes on grain, livestock and collective run entreprises, the most important financial measure taken to boost incentives was the raising of farm produce procurement prices. In 1979, the government of Deng Xiaoping recognized that prices were irrational and introduced far-reaching changes in agricultural planning and organization. It reorganized collective agriculture so as to give

individual households considerable autonomy, and it greatly enlarged the private agricultural sector. A considerable decentralization of planning took place : fewer targets have been sent down to provinces and more important, the number of mandatory targets has been reduced."

13. Theodore W. Shultz has made one of the clearest statements of the point that farmers are willing to make further changes that increase their welfare if it is really clear that an improvement will result without an unacceptable increase in the risk of crop failure and hence starvation. See Transforming Traditional Agriculture (New Haven : Yale University Press, 1964). See also "The Basis for Chinese Agricultural Growth in the 1980s and 1990s : A comment on Document N° 101 of March 1985, p. 120. "Chinese farmers have generally been very responsive to opportunities for economic gain provided by price adjustments or liberalization of restrictions on their activities."

14. W.M. Corden realistically discusses the motive of employment with respect to industrialization. "Protection of manufacturing industry in less-developed countries is usually justified on the grounds that it increases employment, that it moves labor out of low-productivity agriculture into high-productivity modern manufacturing, and that there are various special advantages of manufacturing relative to agriculture." However, he concludes that "these may not always be the true reasons for protection : the income maintenance motive can explain some protectionist history in LDCs as well as in developed countries." See Trade Policy and Economic Welfare, Oxford University Press, 1974, p. 119-154.

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