AKADEMİK BAKIŞ DERGİSİ
Sayı: 56 Temmuz - Ağustos 2016
Uluslararası Hakemli Sosyal Bilimler E-Dergisi
ISSN:1694-528X İktisat ve Girişimcilik Üniversitesi, Türk Dünyası Kırgız – Türk Sosyal Bilimler Enstitüsü, Celalabat – KIRGIZİSTAN
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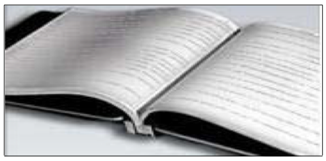

WEAKNESS and LIMITATIONS OF LEWIS MODEL

Coskun SEREFOGLU[1]

ABSTRACT
The distinction of Lewis from other economists is that he regards surplus labour as marginal productivity of labour is negligible, zero, or even negative with respect to human beings rather man-hours. Lewis model has challenged theoretical and empirical evidences from South eastern Asia and Latin America by many economists. In particular, Ted Schultz heavily criticized Lewis model by providing empirical results from India in which Lewis based his model on the over-populated in Indian rural areas. Surplus labour is the central element in Lewis model which is based on a "capitalist" and a "subsistence" sector which are called later as "a modern" and "a traditional" sector in his revisited work of dual economy in 1979. This study is based on a critical literature review in order to explain the limitation of the Lewis model.

Key words: Lewis model, dual economy, surplus labour, marginal productivity, agriculture

LEWIS MODELİNİN ZAYIF YÖNLERİ VE SINIRLAYICILARI

ÖZ
Lewis'i diğer ekonomistlerden ayıran şey onun artık emeği, marjinal verimliliği çalışma saatlerinden ziyade işgücü bakımından sıfır ve hatta negatif olarak kabul etmesidir. Lewis modeli Asya ve Latin Amerika'da ki birçok iktisatçı tarafından teorik ve ampirik olarak desteklenmemiştir. Bilhassa, Lewis`in modelini dayandırdığı Hindistan kırsal alanında aşırı nüfusun olduğu Hindistan'dan gözlemsel sonuçlar sağlayarak Lewis`i cok ağır bir şekilde eleştirmiştir. İşgücü fazlası ilk olarak "kapitalist" ve "geçimlik" daha sonra 1979 yılında açıklık getirdiği yeni çalışmasında ise "modern" ve "geleneksel" sektöre dayalı olan Lewis modelindeki merkezi noktayı oluşturmaktadır. Bu çalışma Lewis modelinin zayıf yönleri ve sınırlayıcı hususlarını açıklayan detaylı kritik bir literatür çalışmasına dayanmaktadır.

Anahtar kelimeler: Lewis model, dual ekonomi, artık işçi, marjinal verimlilik, tarım

INTRODUCTION

Lewis based his model in dual economy divided into a capitalist and traditional sector. The distinction of Lewis from other economists is that he regards surplus labour as marginal productivity of labour is negligible, zero, or even negative with respect to human beings rather man-hours (Lewis, 1954). Lewis in his model of "Development with Unlimited Supplies of Labour" represented a growth model of early industrialization in developing countries over the long run, which is now regarded as canonical to development economics (Fitzgerald, 2004). After Lewis set up his model, it has been criticised theoretically and empirically by many economists. Ted Schultz (1964) is one of those who empirically vigorously attacked Lewis model by introducing evidence from India to show that there was no increase in acreage sown crops observed during 1918-1919 even though there were high death rates because of epidemics. Harris and Todaro (1970) theoretically were object to

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Lewis`s model. They suggested that rural migrants might flow to cities in excess of a "warranted rate" due to high expected unevenness in living standards between rural and urban areas. Labour surplus was thought by Lewis with respect to human beings rather man-hours.

In this essay, I will focus on the weaknesses and limits of Lewis model by grouping his proposition under three main headings. These are labour supply, capital accumulation and integration to the world economy. The first section gives a basic background of the model; the weaknesses of the model will be given in a way of critical viewpoint in the second section, the third section focus on current theoretical and policy relevance in his model and the last section summarises main findings with concluding remarks.

DUAL ECONOMY IN LEWIS MODEL

Lewis (1954) made 15 propositions in his paper. The first proposal is related with the classical model. The rest of the 14 propositions may be grouped into three categories as follow:

Labour supply. The main sources or surplus labour are "subsistence agriculture, casual labour, petty trade, domestic service, wives and daughters" where "the marginal productivity of labour is negligible, zero or even negative" [2]. The subsistence wage "may be determined by the conventional view" or by "the average product in subsistence agriculture" [3]. In consequence, "in such an economy employment expands in the capitalist sector as capital formation occurs" [4] but "capital formation and technical progress result not in rising wages but in a raising share of profits in the national income." [5]

Surplus labour is the central element in Lewis model which is based on a "capitalist and a "subsistence" sector which are called later as a modern and a traditional sector in his revisited work of dual economy in 1979 (Lewis, 1954; 1979). The capitalist sector uses reproducible capital and pays capitalists for the use of thereof. The assumption in the model is that the capital sector expands by absorbing unlimited labour supply in the subsistence sector (Hirota, 2002). In this model labour moves from the traditional to the modern sector with an infinite elasticity of supply (Lewis, 1979). The main focus in Lewis`s model was on the reallocation of labour until the turning point is reached, i.e., the time when labour reallocation has outstripped population growth long enough for dualism to atrophy and the economy to become fully commercialized (Ranis, 2004). The level of wages in the capitalist sector is determined by that in the subsistence sector. Because if the wage in the capitalist sector is less than the consumption in the subsistence sector, no peasant leaves the land to seek a job in the capitalist sector. According to Lewis, the capitalist wage is approximately 30% more than subsistence earnings (Lewis, 1954). Also output per head in subsistence sector is lower than capital sector since it is not fructified by capital (Lewis, 1954). Expansion of the modern sector may benefit the traditional in four ways, each of which has its loss counterpert: through provision of employment, through sharing physical facilities, through modernisation of ideas and institutions, and through trade (Lewis, 1979).

Capital accumulation

The dynamics of the model are such that "as the capitalist sector expands, profits grow relatively, and an increasing proportion of national income is reinvested" [6] Although "capital is formed not only out of profits but also out of credit creation" [7], "inflation for the purpose of creating productive capital is self-destructive" [8]. Finally, the capitalist sector

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cannot continue with 'extensive model' because accumulation is faster than population growth:"when the surplus is exhausted, wages begin to rise above the subsistence level" [9].

Lewis implicitly showed that the traditional sector do not produce any capital accumulation as they are very small and poor. The increase in capitalist surplus is linked to the use of more and more labor which is assumed to be in surplus in case of this model. This process of capital accumulation does come to an end at some point (Lewis, 1954). This can take place in the following ways;

1. If the capital accumulation is proceeding faster than population growth which causes a decline in the number of people in the agricultural or subsistence sector.

2. The increase in the size of the capitalist or industrial sector in comparison to the subsistence sector may turn the terms of trade against the capitalist sector and therefore force the capitalists to pay the workers/laborers a higher percentage of their product in order to keep their real income constant.

3. The subsistence sector may adopt new and improved methods and techniques of production; this will raise the level of subsistence wages in turn forcing an increase in the capitalist wages. Thus both the surplus of the capitalists and the rate of capital accumulation will then decline.

4. Even though the productivity of capitalist sector remains unchanged, the workers in the capitalist sector may begin to imitate the capitalist style and way of life and therefore may need more to live on, this will raise the subsistence wage and also the capitalist wage and in turn the capitalist surplus and the rate of capital accumulation will decline.

Integration to the world economy. Logically, if neighbouring countries also have surplus labour, then labour import and capital export will take place, checking the wage rise [10]. Mass immigration might raise per capita output but would "keep wages in all countries near the subsistence level of the poorest countries" [11]. Similarly, "the export of capital reduces capital formation at home and so keeps wages down" (12) and capital imports do not improve real wages unless they raise productivity in the wage goods sector [14]. Finally, because "the main reason why tropical *commercial* produce is so cheap is the inefficiency of tropical *food* production per man." [14], so that "the Law of Comparative Costs is just as valid in countries with surplus labour as it is in others. But whereas in the latter it is a valid foundation of arguments for free trade, in the former it is an equally valid foundation of argument for protection." [15] (Fitzgerald, 2004).

In Lewis model. **the terms of trade** between the two regions are therefore determined purely by relative labour productivities in Food, independently of demand conditions, because of the assumption of linearity. Knight (2007) pointed out the possible improvement with regard to trade between agriculture and industry as the supply or marketed food falls or the demand for it rises, or both causing the value of marginal product of labour in agriculture to rise.

In Lewis model, Model A, stressing the relative expansion of the capitalist sector as the path of development, and the present one, Model B, which emphasizes the importance of raising the level of productivity in the traditional sector. Thus on the basis of Model B he argues that in exporting manufactures instead of primary products to the rich countries the LDC`s merely exchange one dependence for another whereas if they concentrate on raising productivity in

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Food they would be able to raise the wage level and improve the terms of trade (Findlay, 1980).

WEAKNESSES AND LIMITATIONS IN LEWIS MODEL

Labour force

Lewis model has challenged theoretical and empirical evidences from South eastern Asia and Latin America by many economists. In particular, Ted Schultz heavily criticized Lewis model by providing empirical results from India in which Lewis based his model on the over-populated in Indian rural areas. What Schultz (1964) questions if marginal productivity of labour in agricultural sector is negligible, zero. His proofs dates back to 1918-1919 when there were a serious deathly epidemics caused many people`s life in rural areas. Should the doctrine of marginal product is zero that is true; the acreage sown crops should have been increased due to the declining population. But this did not happen and agricultural productivity declined in those years. As far as the distinction between hired and non-hired labour is concerned, the marginal product of family labour can hardly be zero if workers are hired, nor can the marginal product of the hired workers themselves be zero if they are paid (Thirlwall, 1994).

Theoretical basis of the Lewis model was challenged by Harris and Todaro (1970) who suggested that rural migrants might flow to cities in excess of a “warranted rate” due to high expected inequalities in living standards between rural and urban areas.

There is a clear distinction between the classical and the neo-classical stages for two reasons (Knight, 2007); spatial heterogeneity which mean some regions experience about scarcity before others and imperfect labour mobility that the supply price of rural labour is more likely to rise gently than to jump sharply, so that the supply curve to urban sector will curve upwards gradually. The voluntary of workers between geographical areas is the primary equilibrating force in the labor markets of LDCs (Fields, 1975).

The formal sector real wage may be determined by non-market forces at a level that is above the market-clearing wage. The efficiency wage, labour turnover, and profit-sharing theories of wages, as well as institutional or bargained wage determination, are all contenders. But additional migration, by increasing unemployment, reduces the earnings of all migrants already in the urban labour force by a factor (1 -R), where R is the fraction of the total urban labour force supplied by the rural sector.(Harris and Todaro, 1970). Fields (1975) underlined educated workers who might preferred by industry. If highly educated workers are hired preferentially for modern sector jobs, the urban unemployment rate will be lower than if workers were hired randomly without regard to educational attainment. This is because preferential hiring reduces the number of jobs available to the uneducated, thereby lowering the probability of finding an urban job and inducing large numbers of them to remain in or move back to agriculture.

It is not possible to equate the agricultural sector with the rural sector or the informal sector nor industry with urban or formal. Rural industry can be an important source of employment and the urban informal sector can be an important store of surplus labour.

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Capital accumulation

There can be capital accumulation and technical progress in the rural sector which raises the average product and the supply price of rural labour before the labour outflow itself has its effect on the supply curve. Savings and investment rates, which are expected to rise under the Lewis model, clearly do not exhibit the upward trend expected as the modern capitalist sector expands (Fitzgerald, 2004). Capital accumulation can raise productivity directly and also be the vehicle for technical progress (Thirlwall, 1994).

Integration to the world economy

Fifth, the development of the urban, or industrial, or formal sector can itself lead to the creation of pressure groups and swing the balance of power towards those in that sector, to the detriment of those remaining outside it. The wage in the industrial sector in reality outstandingly rises long before the labour surplus is absorbed. For example, real wages may be forced up directly by labour unions, or indirectly through rising real wages in the subsistence sector due to increased agricultural productivity. Lewis himself states "anything which raises the productivity of the subsistence sector (average product per person) will raise real wages in the capitalist sector, and will therefore reduce the capitalist surplus and the rate of capital accumulation, unless it at the same time more than correspondingly moves the terms of trade against the subsistence sector" (Thirlwall, 1994). Also, capitalists employ more labour−saving equipment to maximise their profit (Hirota, 2002). If profits are reinvested in labour-saving technology, however, this will not be so, and the rate of growth of employment in the industrial sector, and the rate of absorption from agricultural sector, may be very low (Thirlwall, 1994).

The Lewis model would imply that aggregate (or median) living standards should not rise as rapidly as productivity until surplus labour is eliminated. However, the evidence on living standards in Latin America during the twentieth century indicates that these have risen in line with productivity, and that the 'indirect' components of the real wage (health and education) have actually risen more rapidly that average incomes (Fitzgerald, 2004).

Another important critical point given by economists is the intersectoral trade. Lewis focused mainly on organizational dualism, on intersectoral labor markets explicitly and on intersectoral financial markets implicitly; he had relatively little to say about intersectoral commodity markets and the intersectoral terms of trade (Ranis, 2004).

RELEVANCE TO CURRENT POLICIES IN DEVELOPMENT

The most serious critics made for Lewis model were provided by some evidences empirically from Latin America and African countries. In the last three decades, there has been a rapid urbanization and industrialization all over the world. In particular, Latin American countries are challenging rapid urbanization which shows there is a large gap between urban and rural areas and intra urban areas with respect to income inequalities. According to the Lewis model, the more the rate of labour transfer to urban employment, the more the economic grows, and more jobs are created. In the study of economic development in Japan before 1920, it is pointed out that when capitalists enjoy the surplus of labour, technological innovation tends to be labour intensive to get profits by using a cheap labour force (Fei et al., 1964). However, nowadays, the economy in LDCs has been getting deeply involved in the global economy.

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More sophisticated, cheaper and labour−saving technology is easily obtainable through brisk international trade or transnational corporations.

The countries instead of attracting cheap labour into their own countries, they would ideally prefer to invest to the countries where there is available cheap labour, and a better investment environment. Also some countries like China implement strict regulation in order to prevent rapid migration from rural areas. The rural labours are only allowed to work temporarily in the urban areas. This policy has successfully been carried out by the Chinese Government.

CONCLUSIONS

Surplus labour is the central element in Lewis model which is based on a "capitalist and a "subsistence" sector which are called later as a modern and a traditional sector in his revisited work of dual economy in 1979 (Lewis, 1954; 1979). Lewis model can be grouped under three instruments; labour force, capital accumulation and integration to the world economy. The main focus in Lewis`s model was on the reallocation of labour until the turning point is reached, i.e., the time when labour reallocation has outstripped population growth long enough for dualism to atrophy and the economy to become fully commercialized. Lewis implicitly showed that the traditional sector do not produce any capital accumulation as they are very small and poor. Trade between agriculture and industry as the supply or marketed food falls or the demand for it rises, or both causing the value of marginal product of labour in agriculture to rise.

In sum up, there are several weaknesses of Lewis model that are underlined by many economists. The first and most important is that if marginal productivity of labour in agricultural sector is negligible, zero. Schultz (1964), Sen (1967), Harris and Todaro (1970) and Fields (1975) proved with their empirical results that this cannot happen in agriculture sector. It is obvious that there is a disguised unemployment in agriculture. Particularly, agricultural sector should be considered in two ways: during harvest time and post harvest. If the agricultural surplus is solely considered for the regions where there can be seen harsh winter conditions, it could be accepted of the doctrine of Lewis, otherwise it is irrelevant to say there is a zero marginal productivity for agriculture labours. Also, there are positive opportunity costs, e.g. loss of crops in times of peak harvesting season, labour transfer will reduce agricultural output.

Second, he employed his model mostly for the closed economies and gave relatively less information on open economies. Lewis was criticized as it neglects **international trade**. His model was to a certain extent supply-oriented, which does not foresee any trade between capital and other sectors. Also it was criticized advocating industrialization and ignores agriculture. If a section of the profit made by the capitalists is not devoted to agricultural development, the process of industrialization would be jeopardized.

Third, Lewis believed that the more the rate of labour transfer to urban employment, the more the economic grows and more jobs are created. But this is not a common applicable in practice if industrial development involves more intensive use of capital than labour, then the flow of labour from agriculture to industry will simply create more unemployment.

Fourth, the Lewis model would imply that aggregate living standards should not rise as rapidly as productivity until surplus labour is eliminated. However, the evidence on living standards in Latin America during the twentieth century indicates that these have risen in line with productivity, and that the 'indirect' components of the real wage (health and education) have actually risen more rapidly that average incomes.

Fifth, He stated the wage in industrial sector does not increase before labour surplus is absorbed. But this does not happen in any way in reality as the development of the urban, or industrial, or formal sector can itself lead to the creation of pressure groups and swing the balance of power towards those in that sector, to the detriment of those remaining outside it. The wage in the industrial sector in reality outstandingly rises long before the labour surplus is absorbed.

Sixth, The Lewis model underestimates the full impact on the poor economy of a rapidly growing population, i.e. its effects on agriculture surplus, the capitalist profit share, wage rates and overall employment opportunities.

Seventh, the transfer of unskilled workers from agriculture to industry is regarded as almost smooth and costless, but this does not occur in practice because industry requires different types of skilled labours.

Eighth, he assumes boldly that a capitalist's marginal propensity to save is close to one and subsistence`s sector is close to 0. But a certain increase in consumption always accompanies an increase in profits, so the total increment of savings will be somewhat less than increments in profit. But capitalists alone are not the only productive agents of society. Small farmers producing cash crops in Egypt have shown themselves to be quite capable of saving the required capital. The world's largest cocoa industry in Ghana is entirely the creation of small enterprise capital formation.

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