[Academic Script]

LEWIS MODEL

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Unit No. & Title:	Unit – 2 Growth Model
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1. Introduction

Agriculture is the major activity in developing countries and agricultural sector employs a vast majority of the population of many developing nations. Agricultural production function in developing countries needs a separate mention as agricultural production in developing countries is fraught by existence of surplus labour with near zero marginal productivity.

Objectives

1. To understand the meaning of surplus labour and disguised unemployment.
2. To understand the impact of surplus labour in agriculture and in other sectors.
3. To understand the transfer of labour from low productivity occupation to high productivity occupation.
4. To know why and when labour moves from the traditional sector to the modern sector.
5. To understand this phenomenon of labour transfer from the traditional sector to the modern sector according to Arthur Lewis's model.

What is meant by surplus labour? The concept of surplus labour implies that if some labour is withdrawn from farming activity, the farm output remains unchanged.

Such labourers are said to have zero marginal productivity or negative marginal productivity according to Arthur Lewis. These labourers do not contribute to farm output positively but share the farm income. In this sense of sharing the farm income, their marginal contribution is considered negative.

This kind of employment situation is also termed as *disguised unemployment*. Disguised unemployment is a situation in which from a working combination of factors if some labour is removed, there is no change of any consequence in the production process.

The concept of disguised unemployment was introduced into the theory of development by Paul N. Rosenstein-Rodan in 1943 in the article, “Problems of industrialization of Eastern and South-Eastern Europe”.

The concept of disguised unemployment was elaborated by Ragnar Nurkse in 1953, in his book, “Problems of Capital Formation in Underdeveloped Countries”. He mentions that unemployment of the disguised kind is found where too many workers are engaged in agricultural operations because of the lack of alternative or complementary employment opportunities. And, where disguised unemployment prevails in agriculture, it would be desirable to transfer the surplus labour from farms to industry to produce capital goods.

(A. K. Sen gives a slightly different meaning of disguised unemployment. He says that if marginal productivity of some labour is zero, such labour will not be applied at all. According to him, a distinction must be made between labour and labour time. Disguised unemployment is not that too much labour is spent to do a job but that too many labourers are spending it. In a way small share of the total time required to do a job is contributed by many labourers. Disguised unemployment is thus, smaller number of working hours per head.)

W. Arthur Lewis developed in 1954, a systematic theory of “Economic Development with unlimited supplies of labour”.

John Fei and Gustav Ranis in an article titled, “A theory of Economic Development” (1961), explain that development consists of the reallocation of surplus agricultural workers, (whose contribution is zero or negligible) without disturbing agricultural output, to the industrial sector where they become productive at a wage equal to the institutional wage (fixed real wage in industrial sector).

Thus, several models are presented regarding the transfer of surplus labour from agriculture to industries such that the productivity of workers rise, they get better real wages and capital formation increases.

2. W. Arthur Lewis's Model

Lewis built his model upon the 'dual character' of the less developed economies. The dual character is reflected in the co-existence of the 'traditional' and the 'modern' together, where traditional and modern may mean,

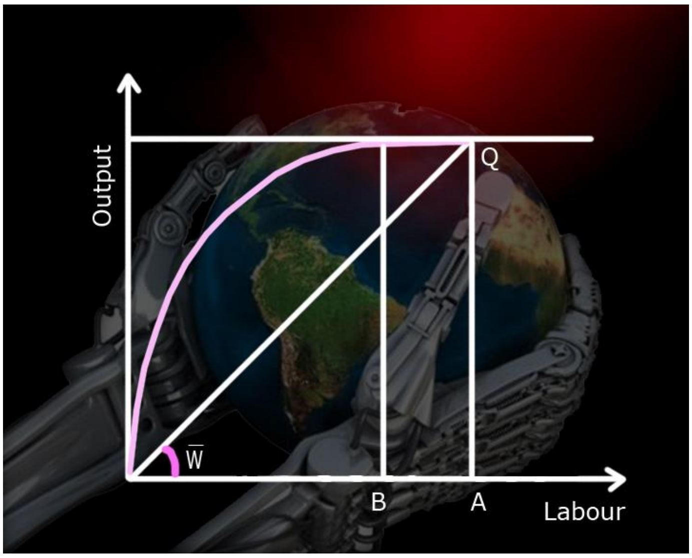
- A traditional agricultural sector and a modern industrial sector,
- Or the co-existence of labour-intensive and capital-intensive technologies in the economy as a whole,
- Co-existence of labour-intensive and capital-intensive technologies in particular sectors
- The co-existence of small-scale subsistence activities conducted by family labour and large-scale, well-organized activities.

Lewis's model considers that traditional sector is the supplier of labour as it has surplus labour which it must take off from production; and the modern sector should assume the responsibility of absorbing this labour.

Lewis further mentions that the modern sector cannot immediately absorb the vast supplies of labour which the traditional sector may release; because the modern sector is dependent on capital and hence its scale is limited by the supply of capital. Hence, Lewis asserts that the rate of savings and investment will determine the expansion of the modern sector; in a way he confirms the Harrod-Domar model. And, the expansion of the modern sector will determine the shift of labour from the traditional to the modern sector.

This model asserts that the supply of labour is unlimited and the traditional sector can supply the surplus labour at zero opportunity cost. There is no loss of output in the traditional sector when labour is removed from this sector.

Let us look at this figure from the angle of the agricultural sector.



- The horizontal axis represents quantity of labour and the vertical axis represents output.
- There is a fixed plot of land which is a family farm.
- The shape of the production function shows that there are diminishing returns to labour as the quantity of land is fixed.
- If quantity of labour is increased from units B to units A, output remains the same. This indicates that A-B quantity of labour is surplus.
- In other words, if quantity of labour is reduced from A to B, there is no loss of output.

- Under the professional agricultural sector or under the industrial sector where there are institutional wages, such labour will not be employed whose marginal productivity is lower than the wage rate.
- However, under traditional agricultural system where there are many small sized family farms, such family members are employed and thus they do not have to struggle to find employment elsewhere.
- The total output is divided by all units of labour which keeps the average wage share lower when there is surplus labour.
- On most farms, the output is small and family is so large that the average wage sharing is barely equal to subsistence wages.

Besides the agricultural sector, such a phenomenon is found in the unorganized sector and in the employment of casual labour force in the less developed nations.

3. What happens when the surplus labour is transferred to the industrial sector?

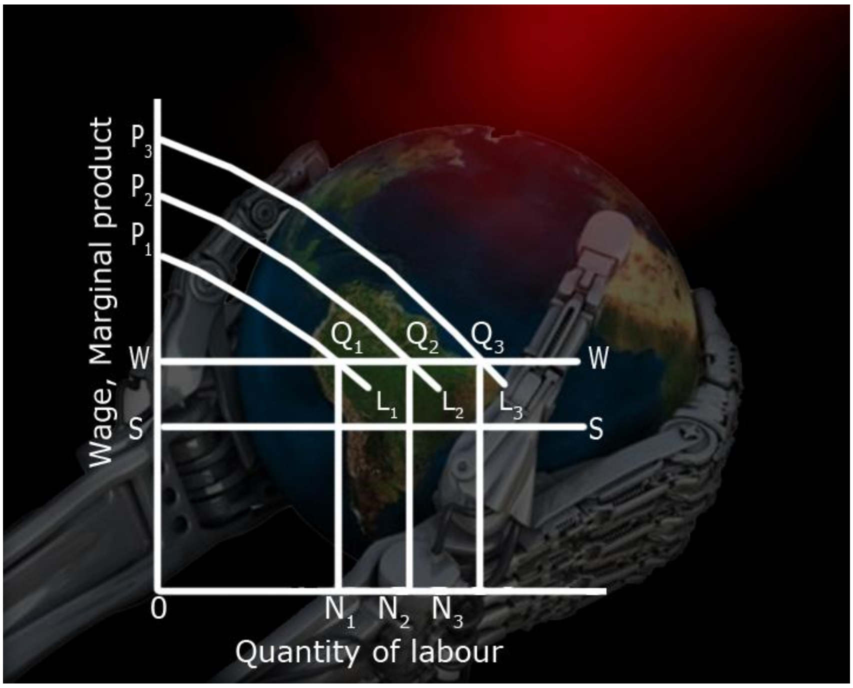
Though there is surplus labour in the economy, the capitalist (industrial/institutional) wages are higher than the subsistence wages in the traditional sector. This is because,

- Workers may be willing to leave the traditional sector only if they are offered higher wages in the industrial sector. This is so as there is a psychological cost of displacement and the cost of living in the industrial sector is higher.
- When some workers are withdrawn from land, output remaining constant, the average wage share of the remaining workers rises and hence the displaced workers demand more wages in the capitalist sector.

- The trade unions are much stronger in the industrial sector and hence there is a bargaining to keep industrial wages higher.

However, it must be noted that in this model, the supply of labour is perfectly elastic at the existing capitalist/industrial wage.

Now growth of the economy depends upon the capital formation in the capitalist sector. Let us check this figure.



- The horizontal axis measures the quantity of labour and the vertical axis measures wage rate and marginal product of labour.
- OS is the subsistence wage rate in the traditional sector and OW is the capitalist wage rate in the modern sector which is higher than the subsistence wage rate.
- At OW wage rate, the supply of labour is perfectly elastic.
- When ON_1 labourer is employed, the marginal productivity is P_1L_1.
- And, the total output is equal to area $OP_1Q_1N_1$.

- The total capitalist wage paid to ON_1 labour is OWQ_1N_1.
- Thus, the remaining area WP_1Q_1 is the capitalist surplus.
- When this surplus is reinvested in new capital and technology, the marginal productivity rises to P_2L_2 and total employment is raised to ON_2 and the total output is now equal to area $OP_2Q_2N_2$.
- The capitalist surplus is area WP_2Q_2 which is the total output minus the wages paid to ON_2 quantity of labour.
- Thus this process continues as is seen in the figure.

If new investment is made in capital-saving technology then according to Lewis, it is considered as an increment in capital, and if the new technology is labour-saving then it implies an increment in marginal productivity of labour.

However, according to Lloyd G. Reynolds, if new capital is labour-saving, the capitalist sector will not absorb new labour easily and hence this model becomes inapplicable.

(Let us remember here that when a factor is subject to diminishing productivity, when more units of this factor are added in production keeping other factors constant, its marginal productivity rises and when lesser units are employed, its marginal productivity rises).

This theory emphasises that rapid capital accumulation will increase the transfer of workers from the traditional to the modern sector. In practical application,

- Governments must ensure that a country which is saving 4-5% of its national income must raise its voluntary savings rate to 12-15%. These are the rates mentioned by Lewis. In current times the savings of many countries is higher than15%.

- Savings and investments are made not only from profits but also from bank credit. Hence, the system of credit must develop well if growth has to continue.

This growth process may stop when,

- Capital sector expands so rapidly that no surplus labour exists in the economy; or rather no labour is working at subsistence wages. This also implies that growth of new capital is faster than the growth of population in the traditional sector.
- If the capitalist sector's demand for inputs from the traditional sector becomes so high that the prices of goods in the traditional sector rises fast and hence the real wages in the traditional sector starts rising; thus preventing further transfer of labour.
- For example, when the industrial sector grows very fast, the demand for vegetables, fruits and cash crops rises. The demand may rise for consumption and production needs by rich urban consumers, restaurants, and canned food manufacturers and so on. Owing to rising demand, the prices of all such agricultural goods rise steeply and thus the agricultural incomes and real wages would rise.
- If the subsistence sector grows fast owing to capital accumulation and the wages in this sector rise, the transfer of labour will stop.
- If workers in the capitalist sector succeed in keeping their wages at very high level, the capitalist surplus will remain low and capital formation and absorption of surplus labour will not easily take place.
- Some critics argued that this model becomes inapplicable in open economies where migration of workers to other

countries is easy or when capital is exported outside the country.

However, Lewis believed that subsistence sector has unskilled workers and other countries will not allow immigration of unskilled labour to their country as wages will fall in their countries and their own workers will agitate.

The effect of capital exports cannot be easily ascertained. A developing country will export capital only when all its surplus labour is employed. If capital is exported otherwise, it will be done to earn higher prices from abroad which will automatically raise the national income of the concerned country and hence growth will occur as a result of high export income.

Q. Can you say what will happen in case the developing country imports capital in the process explained in the Lewis model?

Q. Can you point out some other limitations of this model?

4. Summary

- We studied that less developed countries have a dual character. There is a traditional sector with surplus labour and disguised unemployment.
- Workers shift from traditional to modern sector only if they are offered higher wages. (especially higher real wages)
- We must retain that,
- Large numbers of workers work at subsistence wages in the traditional sector in less developed countries.
- Trade unions influence wages in the modern industrial sector.
- Capitalist surplus in industrial sector = marginal productivity of labour – industrial wage.

- When this surplus is reinvested, capital formation takes place and industrial sector increases demand for surplus labour from the traditional sector.
- However, the process of labour transfer from traditional to modern sector stops when,
    - No surplus labour is left.
    - When wages in the traditional sector rise.
    - Growth of industrial sector slows down.