IC Value 2016 : 61.33| SJIF Impact Factor(2017) : 7.144| ISI Impact Factor (2013): 1.259(Dubai)|UGC J No :47335

Research Paper | Volume - 6, Issue- 4, April 2018 | e-ISSN : 2347 - 9671| p- ISSN : 2349 - 0187

EPRA International Journal of Economic and Business Review

INVESTMENT AND ECONOMIC DEVELOPMENT

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KEYWORDS:
Economic Development, Efficiency of capital, Efficiency of labour, impact, investment, Technology.

ABSTRACT

Most of the people in developing countries are living in poor socio-economic conditions. In pressure to achieve rapid progress or development, proper sector is needed to invest. When investment put in technology including skills, it improves efficiencies of capital and labour. A change technology creates demand for labour and output or final goods. The vicious circle of investment leads to Economic Development.

DISCUSSION

In general 'Economic Development' can be measured in terms of a change in national income or per capita income. Majority of the population in developing countries are living in poor social conditions. Economic growth (G_w) in developing countries or economic development can be measure in terms of a change in real national net output or income ("Y_r) that must be positive. It is a necessary condition but not sufficient condition. The capital and output ratio (K/Q) must be in negative in addition to "Y_r to determine 'Economic Development'. Hence

$G_w = f(K/Q, "Y_r)$.

"Y_r is a change in net output (Q).

Therefore

"Y_r = "Q

Q is an amount of production which is determined by production factors. Hence

Q = f (N, L, K, O, A,U)

Where N = Land, L = Labour, K = Capital, O = Organisation, A = Technology including skills and U = Other elements.

The Cobb-Douglas production function ($Q = AL^{\alpha} K^{\beta}$) reveals how the amount of output is determined by the two variables Land and Capital, in short run 'A' = k (k is a constant). Here 'A' represents technology. 'A' what I mean in the whole paper is technology including skills. If 'A' changes what will happen? What is the impact of 'A' on production?

All most all assumptions in Economics are unrealistic but inevitable as they play vital role in formulating economic theorems. Let us adopt the assumption of ceteris paribus, now rearrange the production function due to change in 'A' changes

P = f (A)

The functional relationship reveals that the production increases due to introduction of new technology including skills in the production process. Hence the incremental change in production ("P) is the impact of 'A'. The impact of technological changes including skills can be measured in terms of efficiencies of capital (e_K) and labour (e_L).

e_k is can be measured by capital output ration which has negative sign. Hence

$$e_K = \frac{K}{P} < 0 \quad \text{....1}$$

Similarly

$$e_L = \frac{L}{P} < 0 \quad \text{.....2}$$

Here, output is equal real income. Therefore the above equations can be rearranged

$$e_K = \frac{K}{Yr} < 0 \quad \text{.....3}$$

Similarly

$$e_L = \frac{L}{Yr} < 0 \quad \text{.....4}$$

The total efficiency (e) is the sum of the efficiencies. Therefore

$e = e_K + e_L$ 5

A change in the efficiency of capital leads to change in production. Hence

$$MPe_k = \frac{\Delta P}{\Delta ek} > 0, \text{ or } MP_K \text{ or } \frac{\Delta P}{\Delta K} \quad \text{.....6}$$

Similarly

$$MPe_L = \frac{\Delta P}{\Delta eL} > 0, \text{ or } MP_L \text{ or } \frac{\Delta P}{\Delta L} \quad \text{.....7}$$

Put equations (6) and (7) in (5), then

$e = e_K + e_L$.....8

the impact of 'e' of technology including skills can be found by increasing K and L in absence of technological changes and skills as the same level of output can be obtained by increasing inputs. Hence, a change in production due to a change in capital can be expressed as

$MP_K = \frac{\Delta P}{\Delta K}$ 9

Similarly, a change in production due to a change in labour can be expressed.

$MP_L = \frac{\Delta P}{\Delta L}$ 10

The fallowing equation represents the arrived conclusion when compare the equations (6,7) and (9,10)

$e_K = \frac{\Delta P}{\Delta K}$ 11

$e_L =$ .....12, therefore

e = + = "P.....13

The rate of change in production due a change in efficiencies of K and L are represented by the fallowing equations

$\eta e_K = \frac{\Delta P}{P} / = \frac{\Delta K}{K}$

$\eta e_K = \frac{\Delta P}{\Delta K} x \frac{K}{L}$ 14

ηe_K is designated as e'

Similarly

$\eta e_L = \frac{\Delta P}{P} / = \frac{\Delta L}{L}$

$\eta e_L = \frac{\Delta P}{\Delta L} x \frac{L}{P}$ 15

ηe_L is designated as e"

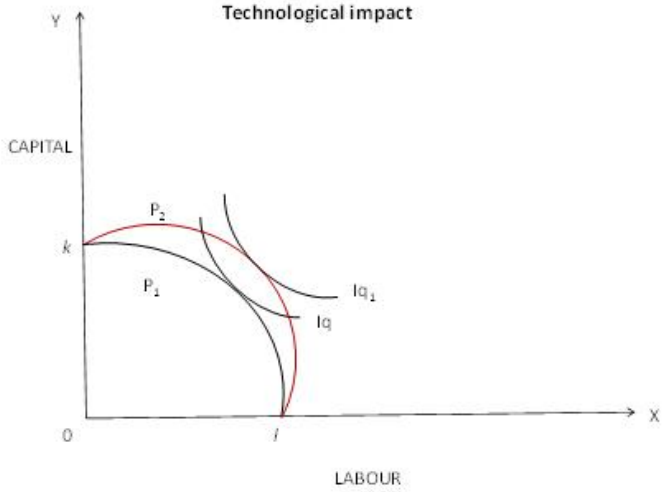
Assume the production function is homogeneous and degree of one. There the production equation can be rewritten as

$P = K^{e'} L^{e"}$ 16

Where e' + e" = 1

The above arguments can be explained graphically.

Graph No.01
Technological impact

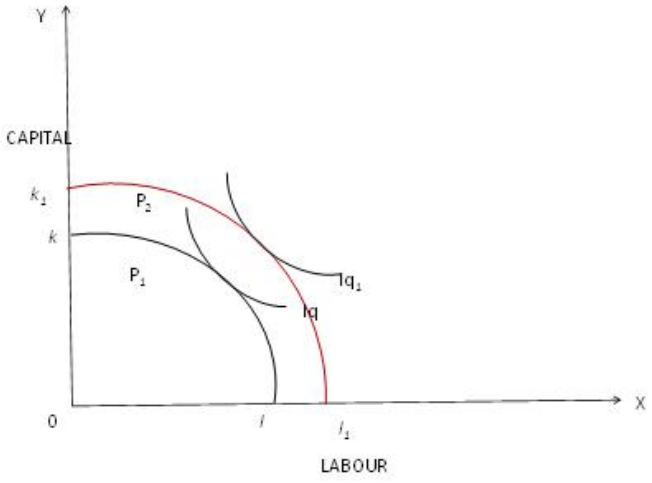


In the above graph No. 01 capital is shown on the Y-axes and labour is shown on the X-axes. Iq and Iq_1 are Isoquants and P_1 and P_2 are production possibility curves which tangent Iq_1 and Iq_2 respectively and P_2 is greater than p_1. An association with capita at *k* and labour at *l* a producer can produce P_1 level of output. The p_2 curves determines that the producer can produce more than p_1 level of out with the same amount of inputs that are *k* and *l*. This can be possible due to increased efficiency of capital and labour by new technology including skills.

In the below graph No.02 shows that the producer can produce P_1 and P_2levels of outputs with *k, l* and k_1,l_1 amount of inputs. $P_1$and P_2 curve tangent Iq and Iq_1. Hence P_2 is greater than P_1 naturally.

It is very clear that Iq_1 amount of production can be produced (graph No.01) by increasing inputs with k_1 and l_1.

Graph No.02
Impact of production factors



Short period

In short period the labour stock curve is parallel to Y-axes as it is a constant though it is a function of population growth which is exogenous factor. The labour supply is a flow concept. It depends on money wage rate. Hence,

$S_L = f(r_w)$ …… 17

The demand for labour depends on demand for output. It can be expressed as

$D_L = f(D_O)$ ……. 18

The quantity of output that demanded depends on income levels of consumers. The relationship can be represented as

$D_O = f(Y_M)$ ……..19

Put equation (18) in equation (19) then

$D_L = f(Y_M)$ ……. 20

Employment opportunities determine the level of income. Hence in equation, it is

$Y_M = f(O_E)$ ……..21

Put equation (21) in equation (20). Then

$D_L = f(O_E)$ ……..22

Investment creates employment opportunities. Paul Samuelson and William D Nordhaus opined that "investment as the addition to the community's stock of tangible capital[1]".

William J Boumal said "investment refers to the production or acquisition of any such real capital asset especially it is the time rate of increase of capital assets[2]".

Edward Shapiro expressed his opinion on investment as "the volume of that part of the economy's output for any time period that takes the form of new structure, new producers, durable equipment and change in inventories[3]"

In Keynes point of view capital is an additional capital to the existing stock of capital. Hence the volume of investment can be measured as

$I_t = K_t - K_{t-1}$ ……23

I indicates investment, K represents capital, t shows present time and t-1 past time.

$K_t - K_{t-1}$ is nothing but "K. therefore,

$I = \Delta K$ ……24

The equation (24) reveals that investment does not mean that replacement of technology; it is additional capital to the stock of capital.

The conclusion that derived from the above discussion is the demand for additional labour or additional employment opportunities equals to the total efficiency. The conclusion represented by the following equation.

$\Delta D_L = e$ ……25

The total efficiency equals to the volume of change in total output. Then

$e = \Delta P$ …… 26

Therefore

$\Delta D_L = \Delta P$ …… 27

CONCLUSION

The conclusion from the above discussion is if we invest on technology including skills it creates more employment opportunities and due to multiplier and acceleration effects rise more demand for output and finally it leads to economic development.

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