Welcome students.

Today I'm going to speak on the topic

of capital -output ratio, which is being

covered under the title of the chapter capital.

So in this particular module.

I'm going to cover the

Meaning of Average Capital- Output Ratio.

What is average capital output ratio?

And Marginal capital output ratio?

So this is basically a module for the

5th semester and it is coming under

the Paper of Growth and Development-I.

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So after going through this module,

the student will be able to understand

the role of capital - output ratio.

What is meant by marginal

capital output ratio?

What is the meaning of

average capital output ratio?

The difficulties that are involved

in calculating capital output ratio

and limitations that are there in

calculating capital output ratio.

So capital output ratio,

or capital coefficient,

it tries to examine the quantitative

relationship between capital

formation and income growth.

This capital output ratio,

it is used increasingly as a

tool of policy formulation and

planning in developed as well

as in less developed countries.

Now, this marginal productivity of capital,

it indicates the contribution that

is undertaken by capital alone to

total output, assuming that the other

factors of production like land,

labor are supposed to be constant.

So is this capital output ratio.

While this capital output ratio it allows

for increases in other factors as well.

The marginal productivity of capital

it tends to range between 5 to 10%,

while the contribution of capital in

combination with other inputs as measured

under capital output ratio is bound

to range between 25 to 40% normally.

So what is Capital output ratio?

Capital output ratio is basically the

relationship of investment in a given

economy or industry for a given time

period to the output of the economy or

industry for a similar time period.

This capital output ratio is exactly

equal to the marginal productivity of

capital only if the contribution of

all the other factors is equal to 0.

Now there are various types

of capital output ratio.

The first one is average

capital output ratio.

So this average capital output ratio is the.

Ratio of existing capital

stock to the aggregate.

That is, all of them added together

To the level of current national output.

Thus average capital output ratio.

You can define as capital upon output.

It takes into account all the

investment that has taken place

and the resultant national output.

Marginal or incremental capital output ratio

is the additional amount of capital or

investment that is needed to produce an.

additional unit of output per unit of time.

We know already marginal what it means.

It means how much additional units

of inputs are required

to produce one unit of output,

thus incremental or marginal capital

output ratio is change in K by change in

Y where change in K is the addition to the

capital stock investment and change in

Y is the addition to the national Output.

So we are taking off the whole economy

and have a given plan period in view.

Then the plan and the plan period covers 10 years.

Then incremental capital output ratio for the

time period from 1 to N is equal to.

Investment in time period T upon YT in N years.

Which is YT plus N minus YT in

the terminal year of the plant,

minus the investment in the

output in the previous year.

So YT plus N minus YT.

So incremental capital output ratio is

equal to YT plus N minus YT.

So what are the difficulties that are

involved in formulating capital output ratio?

The first difficulty that

is involved it is that it is

difficult to measure total capital.

Now this capital stock in a country,

it consists of different

heterogeneous collection of goods

and materials like buildings,

Public works, transportation equipment.

Planted trees.

Machinery inventories. Now each of them are

Specific and you cannot club them together.

So it means that it is not rational to

add them up and express their quantity

in a single figure or in a single format.

The next difficulty is complementary or

Complementarity of investments.

So most investment projects are

Interlocked in an input output relation,

Which means that certain inputs are used

and they will be producing an output.

Now this output will be an

input for some other goods.

So there is complementarity of investment,

so such technical complementarity,

among investment projects

and external economies created

by particular investments,

give rise to a much larger aggregate

national output than the sum total of

individual products of different investments.

So, as I told you,

certain inputs will be that

Will lead to an output and this

output will be an input in the

production of some other goods.

Next difficulty that is involved

is that there is investments being

undertaken in the non multi -sectors.

Mainly we find this in the least developed

countries where the non -multi sector

plays a major role in this sector.

Hardly any accounts are maintained of the

investments being made and additional

Output that are being generated are

not being properly accounted at all.

The next difficulty is the

Capacity utilization.

So accurate estimation of

capital output ratio,

requires some estimate of

utilization of installed or

production capacity being made and further,

it is assumed that throughout the

life of the capital asset capacity

utilization will remain constant.

But however,

it is found that this capacity

utilization keeps changing overtime

and at the time of making an

investment you cannot predict

accurately how it will change over

the lifespan of the capital assets.

This renders the estimation of the

capital output ratio very hazardous.

The next difficulty involved is the

imperfections of the market.

because one difficulty that is involved

is the degree of monopoly in the market,

which will always raise the price

of the product in the market,

thereby increasing the value of the

output and reducing capital output ratio.

So this is an imperfection.

Monopoly is a sort of an imperfection

that will arise in a market.

So if you cannot accurately

estimate market effect,

perfections or changes in them,

then capital output ratio

cannot be correctly predicted.

The next difficulty that is involved is

that it considers only fixed investments.

so this again leads to a fallacious

or wrong picture regarding the

relationship between capital output ratio.

AK Sen however, points out that the

inclusion of working capital would

raise the capital output ratio even

in those industries where the capital

coefficient is supposed to be low.

Next difficulty that is involved

is that additional work shifts is

another difficulty that is involved

in calculating capital output ratio.

So additional work shifts means getting

more output from the same capital stock.

Thus multi shift working would

generate more output without the

need for additional investments.

This complicates the estimation

of capital output ratio.

The next are

,

the limitations that are

involved in capital output ratio.

The first limitation is the

problem of Co-operant factors.

So in capital output ratio output

is related to capital in a certain

predictable manner only if the

Co-operant factors like trained manpower,

entrepreneur ability,

infrastructural facilities are available.

But most of the times we find that

in underdeveloped countries this

coo-parent factors are not at all

available or so we cannot take for

granted that there will be an adequate

supply of Co apparent factors,

especially when it comes to.

Underdeveloped countries,

Another limitation that is involved in

this capital output ratio is too much.

emphasis is given on investment.

The concept of capital- output

ratio plays too much emphasis

on investment for expansion.

This insistence on investment implies

taking a mechanical view on the problem

of capital formation and change.

In many of the underdeveloped countries,

there are however many possible ways

of increasing output with very little

or no capital investments at all.

Next the

difficulty limitation is that

there is a problem of time lag.

So what is the investment that you have

undertaken in this particular year?

May not be reflected in this year. Why?

Because if you have constructed, say,

a bridge or any other material,

The effect of it will be reflected

only in the subsequent years.

So there is a problem of.

Time lag because.

Once you started.

Constructing or building a particular thing.

The effect of it gets reflected

only in the later on, years.

Thus,

there is a time lag between the

investment made and output obtained,

which makes the imputation of a given

output to a given input impossible.

Next difficulty is that it

is not a limitation.

Is that not suitable for

making investment decisions?

The capital output ratio does not

indicate the extent to which other

resources are to be increased

in combination with capital.

The requirement of other factors can be

known only if the production function is. homogeneous

Now the references I've used

for this model is from Smith

and Todoro Economic Development.

Name of the book and the next

reference I've used is by A.P.

Thirlwall Economics of Development.

Thank you so much.