**Determining Factors and Limitations of Capital-Output Ratio**

Capital-output ratio is the amount of capital required to produce output worth Re. 1. If Y stands for output or income and K for the stock of capital used to produce that output, then K/Y represents capital-output ratio. It is useful to distinguish between marginal capital-output ratio and average capital-output ratio. Whereas average capital-output ratio describes the ratio of total capital to total output or income of the economy, marginal capital-output ratio is ratio of incre­ment in the stock of capital to the increment in output.

Therefore, marginal capital-output ratio ∆K/∆Y can be written as where AK is the increment in capital and AY is the resultant increase in income or output. Therefore, marginal capital-output ratio is also called incremental capital-out­put ratio (ICOR).

The rate of economic growth of a country depends upon the rate of capital formation and capital-output ratio. Capital-output ratio determines the rate at which output grows as a result of a given volume of capital investment. For example, a capital-output ratio of 4 would mean, in Indian rupees, that a capital investment of Rs. 4 results in the addition of output worth Re. 1. Hence, in order to produce a given level of output, smaller capital investment would be needed if the capital-output ratio is lower than when it is higher.

**Factors Determining Capital-Output Ratio:**

It is difficult to estimate the capital-output ratio of an economy. The productivity of capital depends upon many factors such as the degree of technological development associated with capital investment, the efficiency of handling new types of equipment, the quality of managerial and organizational skill, the existence and the extent of the utilisation of economic overheads and the pattern and rate of investment.

For instance, the higher the proportion of investment devoted to the production of light consumer goods, the lower the capital-output ratio; and higher the proportion of investment devoted to public utilities, i.e., economic and social overheads, the higher will be the capital-output ratio, and vice versa.

Likewise, the greater the investment devoted to basic heavy industries, the higher will be the capital-output ratio, and vice versa. The superior organising ability and the use of better technology will lower the capital-output ratio. The capital-output ratio also varies with the prices of inputs.

It is agreed that capital-output ratio in underdeveloped countries is generally higher, i.e., the capital is less productive in them than in developed countries. This is so because there is a relative inefficiency of the industries which produce capital goods.

There is the greater wastage of capital in the process of production due to low level of technical knowledge. Besides, owing to indivisi­bilities, certain kinds of investment are bound to be initially under-utilised. As development proceeds in the developing countries the pattern of demand shifts towards the more capital-intensive industries.

In order to gain the most from capital formation, a country must also undergo technological and organizational progress, so that the capital-output ratio be reduced. Thus, the growth of the rate of output depends not only on the amount of capital accumulated but also on how much capital is required per unit increase in output (i.e., incremental capital-output ratio).

The lower the incremental capital-output ratio, the more accelerated is economic growth. A low capital-ratio is, thus, as significant as large capital accumulation. But it must also be pointed out that a low increment capital-output ratio requires technological and organisational progress so that capital becomes more productive.

**Limitations of Capital-Output Ratio:**

It may, however, be pointed out that the concept of capital-output ratio suffers from certain limitations. Its precise calculation presents some formidable difficulties. Hence, the quantities relationship between capital investment and output, which the capital-output ratio suggests, may prove to be misleading. It would, therefore, be hazardous to base the estimates of capital re­quirements of an industry or economy on such ratios.

Neither can the capital stock be assumed with any exactitude; nor is the other side of the ratio, i.e., output capable of any precise meas­urement. Besides the index number problems, a clear distinction cannot be often made between capital goods and non-capital goods. Returns to social overheads, in particular, cannot be cal­culated accurately.

Further, capital-output ratio is influenced by several variables, e.g., techno­logical improvements, better utilisation of equipment, organisational improvements, labour efficiency, and these factors elude quantitative measurement.

Hence, the concept of capital-output ratio has only a limited practical significance, because it cannot indicate the actual contribution of capital alone in a given scheme of investment. Great caution is, therefore, necessary in making use of a particular capital-output ratio in the adoption of actual investment policy.

## What is Capital Output Ratio? What is its significance in macroeconomic management?

A frequently used tool that explain the relationship between the level of investment made in the economy and the consequent increase in GDP is capital output ratio. The concept of capital output ratio expresses the relationship between the value of capital invested and the value of output.

Capital output ratio is the amount of capital needed to produce one unit of output. For example, suppose that investment in an economy, investment is 32% (of GDP), and the economic growth corresponding to this level of investment is 8%.

Here, a Rs 32 investment produces an output of Rs 8. Capital output ratio is 32/8 or 4. In other words, to produce one unit of output, 4 unit of capital is needed. But don’t forget that the Rs 32 invested in the form of machineries will remain there for around ten or twelve years. Such a machinery will be giving Rs 1 output in every year.

**What is the relevance of capital output ratio in economic planning?**

Capital output ratio has very good use in economic planning. Suppose the government targets an economic growth of 9% for next year. planners know that the capital output ratio in India is 4. Here, to realize 9% growth, investment should be increased to 36% (9 x4).

Capital output ratio thus explain the relationship between level of investment and the corresponding economic growth. There is a simple equation in economics that shows the relationship between investment, capital output ratio and economic growth.

 G = S/V

Here, G is economic growth, S is saving as a percentage of GDP and V is capital output ratio.

**What is Incremental Capital Output Ratio (ICOR)?**

Another variant of capital output ratio is Incremental Capital Output Ratio (ICOR). The ICOR indicate additional unit of capital or investment needed to produce an additional unit of output. The utility of ICOR is that with more and more investment, the capital output ratio itself may change and hence the usual capital output ratio will not be useful.

**Lower capital output ratio shows productivity of capital and technological progress**

A lower capital output ratio shows that only low level of investment is needed to produce a given growth rate in the economy. This is considered as a desirable situation. Lower capital output ratio shows that capital is very productive or efficient.

**How efficiency of capital can be achieved?**

It is possible mainly through technological progress. When there is superior technology, capital will be efficient to produce more output and capital output ratio will be lower.