Theory of Firm

M.com Semester II(Applied Economics)

Prof . Rachna Mujoo

There are mainly three streams of thought associated with the theory of firm. These are:

i. Economic Theory
ii. Managerial Theory
iii. Behavioural theory

Out of these the ii and iii ones are more realistic to the existing business organization consisting of joint stock companies where the owners (Shareholders) are different from the managers(or board of directors) appointed by them. The ownership and risk taking is the function of the stockholders and decision making and control is with the directors or managers. This divorce between ownership and control results in an agent principle conflict whereby the interests of both does not work in tandem. These theories talk about multiple objectives as against profit maximization being the sole objective as advocated by the economic theory. The objectives can be sales maximization or balanced rate of growth of a firm. These theories are being taken up in the succeeding paragraphs.

Marris' Growth Maximization Model

Working on the principle of segregation of managers from owners, Marris proposed that owners   (shareholders) aim at profits and market share, whereas managers aim at better salary, job security and growth. These two sets of goals can

be achieved by maximising balanced growth of the firm (G), which is dependent on the growth rate of demand for the firm's products (gD) and growth rate of capital supply to the firm (gC). Hence growth rate of the firm is balanced when the demand for its product and the capital supply to the firm grow at the same rate.

Marris further said that firms face two constraints in the objective of maximisation of balanced growth, which are explained below:

Managerial Constraint

Among managerial constraints, Marris stressed on the importance of the role of human resource in achieving organisational objectives. According to him, skills, expertise, efficiency and sincerity of team managers are vital to the growth of the firm. Non- availability of managerial skill sets in required size creates constraints for growth: organisations on their high levels of growth may face constraint of skill ceiling among the existing employees. New recruitments may be used to increase the size of the managerial pool with desired skills; however new recruits lack experience to make quick decisions, which may pose as another constraint.

Financial Constraint

This relates to the prudence needed in managing financial resources. Marris suggested that a prudent financial policy will be based on at least three financial ratios, which in turn set the limit for the growth of the firm. In order to prove their discretion managers will normally create a tradeoff and prefer a moderate debt ratio, moderate liquidity ratio and moderate retained profit ratio.

(a) Debt ratio (DR): This is the ratio between borrowed capital and total assets of the firm.High value of this ratio may cause insolvency; hence a low value of this ratio is usually preferred by managers to avoid insolvency. However, a low value of DR, may create a constraint to the growth of the firm in terms of dependence on high cost capital, i.e., equity.

(b) Liquidity ratio (LR): This is the ratio between liquid assets and total assets and is an indicator of coverage provided by current assets to current liabilities. According to Marris, a manager would try to operate in a region where there is sufficient liquidity and safety and hence would prefer a high LR. But this would imply low yielding assets, since liquid assets either do not earn at all (like cash and inventory), or earn low returns (like short term securities).

(c) Retention ratio (RR): This is the ratio between retained profits and total profits. In other words, it is the inverse of dividend payout ratio, i.e., the retained profits are that portion of net profit which is not distributed among shareholders. A high retention ratio is good for growth, as retained profits provide internal source of funds. However, a higher RR would imply greater volume of retained profits, which may antagonise the shareholders. Hence managers cannot afford to keep a very high value of retention ratio.

According to Marrisfinancial security constaint is negatively related with LR and directly to DR and RR. He also assumes a negative relation between financial constraint and job security.

The utility of managers is a function of salary, power, status and job security which they aim to maximize. On the other hand the utility of managers which they aim to maximize, is a function of profits , capital , output , market share, public esteem.

Contrary to other managerial theories, Marris feels that the conflict between the maximizing behavior of owner's and shareholders is not so great as the variables in the two utility functions are strongly correlated to the size of the firm. They have a common interest in the size of the firm, and therefore, are primarily   concerned with maximization of the rate of growth of size. The failure on the part of a firm to expand rapidly enough could lead to take-over bids by other firms with more active, energetic and dynamic managers who are aware of the potential which is not being utilized in the slow-growing firm.

Formal Presentation of the Model

Marris has presented a dynamic model of the firm, by stating clearly the objectives and constraints. However, he presents his model formally in mathematical and/or graphical form.

In Marris's model the optimization goal of the firm is maximization of the balanced rate of growth (g) which internally depends on two factors: the rate of growth of demand for the firm's products (gD), and the rate of growth of capital supply (gC). Thus
$$g = gD = gC$$
The firm seeks to pursue this balanced growth objective, subject to two major constraints: managerial and financial. The managerial constraint is set by the skill and efficiency of available manager's team. The financial constraint is set by the desire of managers to attain the maximization of their own utility function and their owner's utility function. Marris argues that since growth is an objective acceptable to both the owners and managers therefore there is no need to distinguish between rate of growth of demand (which maximizes utility of managers) and rate of growth of capital supply (which maximizes utility of owners) since in equilibrium these two are equal. Thus we can write two utility functions as

$$U_0 = f_1 (gC)$$
$$U_m = f_2(gD,s)$$
Where C-capital supply; D-demand,s-job security constraint

At the outset, Marris treats s as an exogenously determined constraint by assuming that there is a saturation level of job security. Above that critical level, $(\partial U_m/\partial s) = 0$, while below that level, $(\partial U_m/\partial s) = \alpha$. If this assumption is made the managerial utility function may be expressed as

$U_m = f_2\,(gD)\,\bar{s}$

This growth is subject to two constraints already discussed above. Marris assumes that 'managerial ceiling' sets an upper limit to the growth of a firm. Secondly the financial constraint can also set a limit to growth, and this constraint originates in the job- security considerations. In view of job-security, the managers become risk-averters by choosing a prudent financial policy which consists of determining optimum levels of the following critical financial ratios: LR, DR and RR. These three ratios are combined into a single parameter to represent the financial security constraint.

Policy variables

For achieving the firms objectives of maximization of growth of demand and capital Marris introduces these three policy variables

    i.   financial security constraint$-\ \bar{a}$

    ii.   rate of diversification –d

    iii.   average profit margin-m

  After deciding on its financial policy, the firm has to decide on rate of diversification and average profit margin for maximization of balanced growth

Rate of diversification depends upon the change in the style of existing range of products or by expanding its range of products. This can be either *differentiated or imitative*. In differentiated diversification, firm introduces entirely a new product having no close substitutes. This creates new demand and thus competes with the

existing products. Imitative diversification means introduction of product which is substitute to the products already produced by the competitors. In the first form the reaction of competitors is not expected as there is no encroachment of the market share, whereas in the second one retaliatory action is expected. Hence the firms prefer a growth in demand through differential diversification. Higher diversification rate means higher rate of growth of demand.

Average profit margin is a residual which can be derived as

m=$\overline{P}$- $\overline{C}$-A-R&D

assuming price and production costs being given, m is negatively related to advertisement expenditure and R&D expenditure. The proportion of successful new products depends upon d, the rate at which new products are introduced. However if products are introduced too fast, the percentage of failures increases. Thus diversification rate,d and growth rate of demand gD are positively correlated, but gD increases at a decreasing rate as d increases. At the same time gD and average profit margin is inversely related as advertisement expenditure and R&D expenditure increase gD but reduce m.

Thus:**gD=f₁(d,m)**

Diagrammatically it can be shown as follows:

Figure 16.1 $g_D = f(d)$ given m

Figure 16.2 $g_D = f(d, m)$
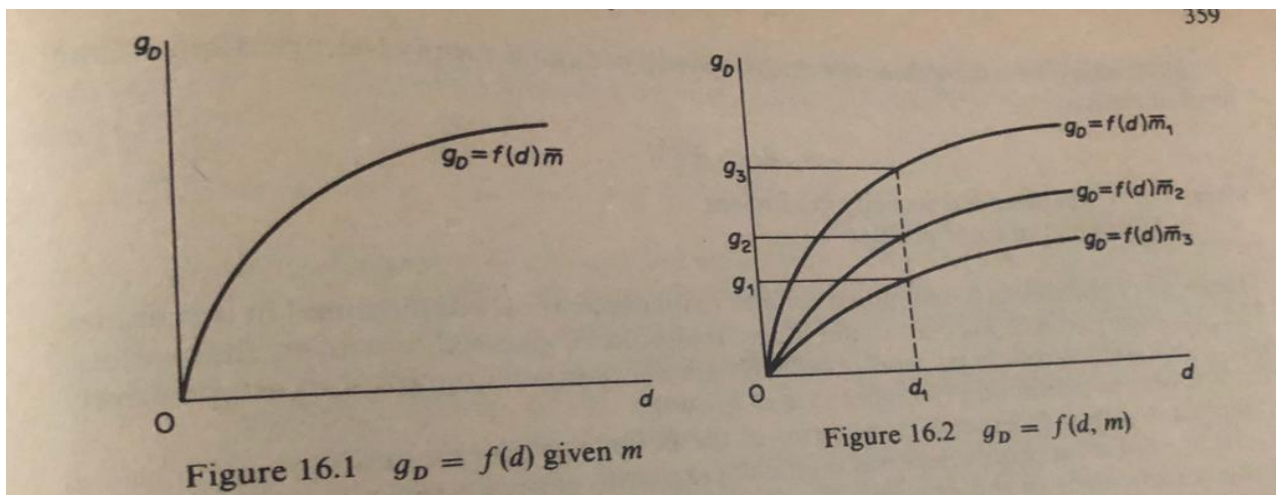
The average profit margin, m is constant along any gD curve. However with the increase in m the curve shifts downwards due to negative relation between the two.

The owners are interested in maximizing the rate of growth of capital which is taken as a measure of growth of the size of a firm. Internally main source of capital is RR and externally, the issue of new bonds or borrowing from banks. The financial coefficient determines the retained profits and therefore determines rate of growth of capital supply.

Thus: $gC = \bar{a}(\Pi)$

Which means rate of growth of capital supply is directly proportional to the magnitude of profits. Rate of growth of capital supply and thereby profits per period is dependent upon average rate of profit, m and rate of diversification. Profit function can be written as

$\Pi = f_2(m,d)$

Substituting this profit function in the growth of capital function

$gC = \bar{a}[f2(m, d)]$

where $\bar{a}$ is financial security constraint. Thus the rate of growth of capital is where dependent upon the three factors- $\bar{a}$; m; and d

Figure 16.3 $g_C = f(d)$, given $\bar{m}$ and $\bar{a}$ Figure 16.4 $g_C = f(d, m)$, given $\bar{a}$
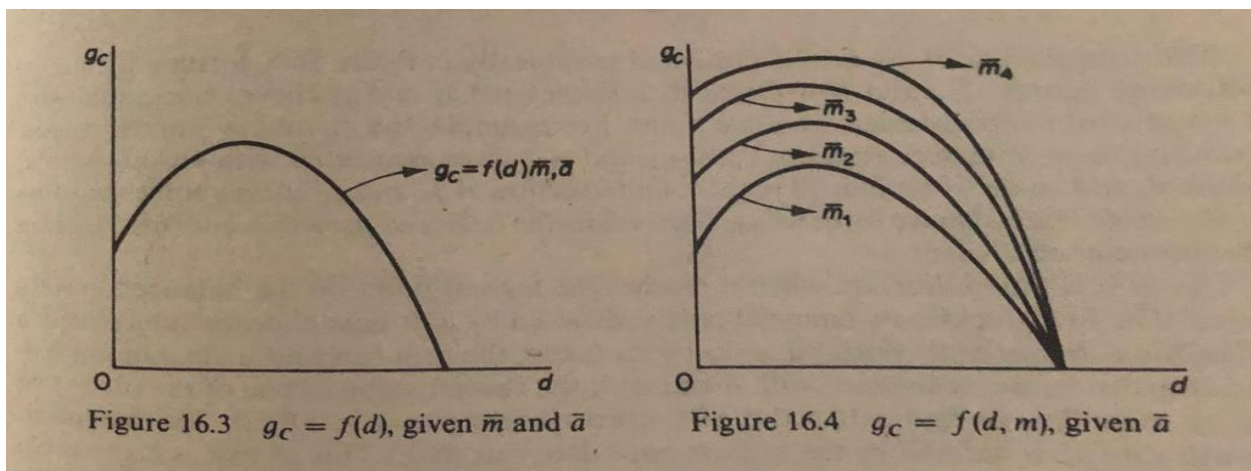
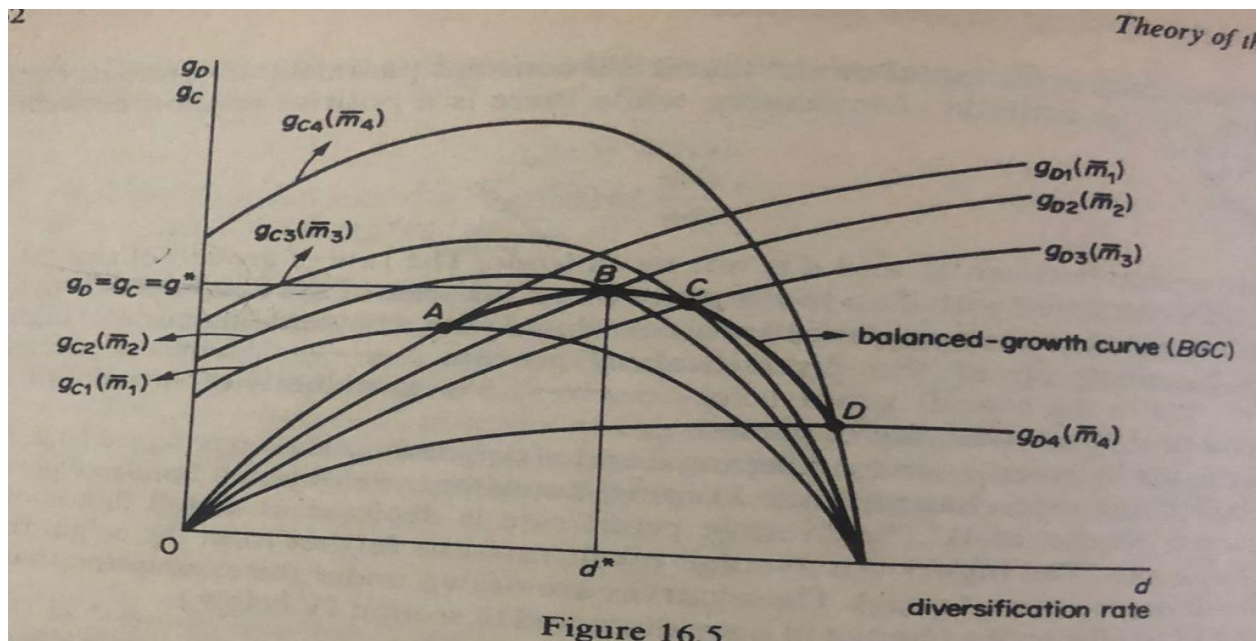. Marris assumes that financial coefficient is exogeneously determined by the managers perception, whereas there is a positive relation between gC and m. The relationship between Π and d is initially positive, reaches a maximum and then declines with further acceleration of d. This implies that beyond optimal use of R&D and managerial skill, inefficient decision making and number of failures will reduce profits and internal funds leading to lower growth in gC.

Equilibrium:

From these two functions of growth rate of demand and growth rate of capital supply, the firm attains equilibrium at the highest rate of balanced growth.

$$g^* = gD = gC$$

Figure 16.5

Superimposing gD diagram over gC diagram, the equilibrium is given by the above diagram. Given their shapes the two curves intersect each other for a given profit rate.

, m1,m2,m3 and so on at points A,B,C and D. joining these points gives us the balanced growth curve, given the financial coefficient. Highest point on this curve,i.e., B is the equilibrium point.

References:

1. A.Koutsoyiannis, Modern Microeconomics, Macmillan

2. H.L. Ahuja,Advanced Economic Theory,S. Chand & co.