



Title	THE IMPLICATION OF PROFIT OR UTILITY MAXIMIZATION IN FIRM'S BEHAVIOR
Author(s)	KOBAYASHI, YOSHIHIRO
Citation	HOKUDAI ECONOMIC PAPERS, 5, 39-56
Issue Date	1975
Doc URL	http://hdl.handle.net/2115/30664
Type	bulletin (article)
File Information	5_P39-56.pdf



[Instructions for use](#)

THE IMPLICATION OF PROFIT OR UTILITY MAXIMIZATION IN FIRM'S BEHAVIOR

YOSHIHIRO KOBAYASHI

The purpose of this paper is to clarify the implication of profit maximization and utility maximization in the theory of firm, especially, the meaning of these assumptions in analysing the behavior of the modern corporation. Main issues are as follows. In the modern corporation, separation of control and ownership widely exists, and many authors argue that objectives of owner and manager may not coincide. What relations are there between firm's and manager's objectives, and also what relations are there between profit maximization and manager's utility maximization?

In Section 1, I examine the concept of business behavior including manager's, firm's, and owner's. In Section 2, I examine Scitovsky's argument on profit maximization and extended analysis of it by G. W. Ladd. In Section 3, I analyse interrelation between these assumptions and ownership of firm, namely, between the behavior of a firm controlled by the owner-manager and the behavior of a firm controlled by the pure manager. Finally, I will propose a hypothesis on the goal of a firm controlled by a group of firms, common among large Japanese corporations.

1. THE CONCEPT AND IMPLICATION OF BUSINESS BEHAVIOR

The implication of profit maximization in the economic theory lies in consistency of the theory. In other words, it is needed to hold consistency of the theoretical system.

But for the assumption of maximizing behavior in each unit, the general equilibrium in the economic system cannot be achieved. For example, H. T. Koplín says, "Choice of a form of the profit maximization assumption must recognize the primary role of the assumption, which is as an essential element in the broad theoretical construct known as price theory. The form of this particular element of the theory should therefore be chosen to make it consistent with the broader theory of which it is a part."¹⁾

However, as G. W. Ladd has pointed out, many economists are dissatisfied with the assumption that profit maximization is the objective of

¹⁾ H. T. Koplín, "The Profit Maximization Assumption", *Oxford Economic Papers*, p. 131, July 1963.

firms in industries that are not perfectly or purely competitive. He says, "These same economists, however, seem satisfied to assume profit maximization for firms in competitive industries, apparently in the belief that firms that do not maximize profits cannot survive in such industries."²⁾ We must have distinction of concepts in two aspects; the first, the distinction of entrepreneur from capitalist, and the second, the distinction of business firm from business man or entrepreneur.

At first we must distinguish the entrepreneur's behavior from the capitalist's (=capital owner) behavior. If we take a theoretical situation in which entrepreneur does not exist and only factor owners, capitalists and laborers are engaged in economic activity, the argument would be simpler. But if we regard the entrepreneurship as a factor of production, we must consider the entrepreneur's behavior. The question or the critique for profit maximization assumption is related to the problem of whether a modern large corporation aims at profit maximization or not and whether entrepreneur's interest is consistent with the owner's interest or not, where ownership and management are separate. Perhaps, the capitalist's behavior would be profit maximizing, but the entrepreneur could be maximizing utility on the other. And this utility might include various things, for example, salary and prestige. As Koplin pointed out, the assumption of utility maximization is far more fundamental to price theory than that of profit maximization. "The former is basic, the latter derivative."³⁾ But if profit maximization is properly defined, it may be consistent with utility maximization. Secondly, we must distinguish between the business firm and the business man. Profits are maximized by a business 'firm', and not by a business 'man'. A business firm is an agency but it is operated by business 'men'. The former's objective is profit maximization and the latter's objective is maximization of his utility. However, profit maximization is achieved through the utility maximizing behavior of the business 'man' or the entrepreneur. Koplin says, "The firm is an artificial entity through which the interests of various groups of individuals (workers, managers, suppliers of capital, & c.) are related. Maximization of profits by a firm simply means ordering these relationships so as to maximize the residual gain (or minimize the residual loss), which accrues

²⁾ G. W. Ladd, "Utility Maximization Sufficient for Competitive Survival", *Journal of Political Economy*, p. 478, July/August 1969. In his article Ladd quoted such passages "If there were keen competition, the management could not depart from the principle of profit maximization—at least for long" (M. W. Reder, "A Reconsideration of the marginal Productivity Theory", *Journal of Political Economy*, October 1947). "The assumption of profit maximization followed from the assumption of perfect competition as a necessary consequence" (O. E. Williams on, *The Economics of Discretionary Behavior: Managerial Objectives in a Theory of the Firm*, 1964).

³⁾ H. T. Koplin, *op. cit.*, p. 131.

to the owners.”⁴⁾ The owner-manager is also a business man. He is a profit maximizer as an aspect of an owner, on the one hand, and he is a utility maximizer as an aspect of a manager, on the other hand. “The owner-manager directs the firm in such a way as to maximize the excess of the firm’s revenue over its costs, the crucial issue here is the definition and identification of costs. ... Included in the costs of the firm are the imputed opportunity earnings on factors owned by the firm, including the imputed cost of equity capital, and of the managerial services of the owner.”⁵⁾ Scitovsky has shown the relation between profit maximization and utility maximization by the owner-manager⁶⁾. Next chapter, we examine his argument.

2. SCITOVSKY’S ARGUMENT ON PROFIT MAXIMIZATION AND ITS IMPLICATION

Scitovsky draws the entrepreneur’s indifference map between money income, m , and entrepreneur’s inactivity (=leisure), L .⁷⁾ Entrepreneurial activity is the negative of L and is measured from right to left along the horizontal axis.

The entrepreneurial activity can be measured in terms of output. Therefore, we can draw the entrepreneur’s total receipts curve and total outlays curve in this diagram. The vertical difference of the two curves shows, for each level of output, the entrepreneur’s total net income from operating his firm. ω represents zero output or total entrepreneurial inactivity. Taking these differences as ordinates, we can draw the entrepreneur’s net income curve. Fig. 2 shows the entrepreneur’s net income

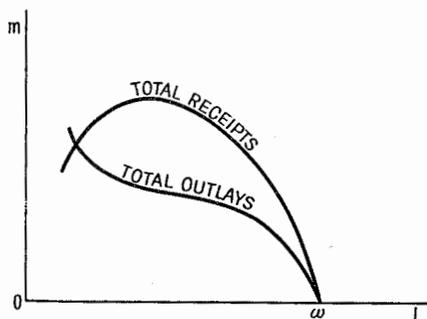


Fig. 1.

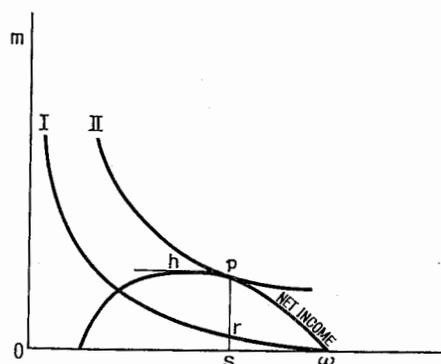


Fig. 2.

4) *ibid.*, p. 131.

5) *ibid.*, p. 132.

6) T. Scitovsky, “A Note on Profit Maximization and Its Implication”, *The Review of Economic Studies*, 1943.

7) Scitovsky, *op. cit.*, p. 57, Fig. 1.

curve and indifference curves.⁸⁾ Point h is the maximum net income level. On the other hand, point p which is tangential to an indifference curve is the point of entrepreneur's maximum satisfaction.

According to our general notion of the shape of indifference curve, it would not be tangential to the net income curve. If the indifference curves were horizontal, it would mean that an entrepreneur does not evaluate inactivity and act 24 hours per day. It would also mean that an entrepreneur is not a human but an impersonal economic unit.

Now, we go back to Scitovsky's argument. The entrepreneur is assumed to maximize the difference between his total receipts and total costs include not only the entrepreneur's outlays, but also the wages of routine management. Therefore, entrepreneur's income consists of two elements; the wages of routine management and the profits of entrepreneurship proper. The wages of routine management is an opportunity cost that will keep the entrepreneur in his profession. It is represented by the indifference curve I in Fig. 2. Point p is the entrepreneur's utility maximizing point. ps consists of two parts, namely, the entrepreneur's profit, pr , and the wage of routine management, rs . The main problem is, under what conditions does the maximizing of profits lead to the maximization of the entrepreneur's satisfaction, or utility? Scitovsky says, "Profit, the vertical distance between the net income curve and the indifference curve I , is greatest at the level of output where the tangents to the two curves are parallel. The entrepreneur's satisfaction is greatest at the level of output where the net income curve is tangential to an indifference curve. ... For the net income curve to be tangential to an indifference curve at the same level of output at which its slope equals that of indifference curve I , and tangents to the two indifference curves at that level of output must be parallel. In order that this condition may be satisfied for any and every kind of net income curve, all indifference curves must have the same slope for each abscissa. In other words, the several indifference curves must be vertical displacements of each other."⁹⁾ It can be said that a special type of indifference curve, and a special type of the entrepreneur's psychology, is presumed. "The economic meaning of the above geometrical condition is that the entrepreneur's choice ... must be independent of his income. This is equivalent to Marshall's familiar assumption of a constant marginal utility of money."¹⁰⁾

Let us examine the formulation of Scitovsky's arguments. The entrepreneur's utility function can be expressed in $U(M, L)$. M, L are money

⁸⁾ *ibid.*, p. 58.

⁹⁾ *ibid.*, p. 58.

¹⁰⁾ *ibid.*, p. 59.

income and leisure, respectively. Indifference curve I is zero-profit one. $U_I(M, L) = K_I$ (K_I constant) represents the indifference curve I . Ladd pointed out that Scitovsky did not discuss the derivation of the net income curve. But the derivation of this curve is important for formulation.¹¹⁾ P is sales price of output, P_j = price of j th input, X_j = quantity of j th input purchased, R = total receipts, and E = total outlays. Then entrepreneur's income $M = R - E = PQ - \sum_j P_j X_j$. M includes two components, the entrepreneur's profit Π and the wage of routine management. Ladd assumes it can be solved for M to obtain $M_I = M_I(L, K_I)$. M_I represents the wage of routine management corresponding to each level of L . Thus $\Pi = M - M_I(L, K_I)$. If L is fixed at some value, say L^* , then, $\Pi = M - M_I(L^*, K_I)$. Since L^* and K_I are constants, $M_I(L^*, K_I)$ is constant. Production function is expressed in $f(x_1, x_2, \dots, x_n, L^*)$. Π is maximized by maximizing M , subject to the constraint, $f(x_1, x_2, \dots, x_n, L^*)$. Maximizing M subject to the production function for various values of L^* yields the net income function for a profit maximizer. This net income function may be written as, $M_\Pi = M_\Pi(L)$. And also, net income function for a utility maximizer is $M_u = M_u(L)$.

Total differential of utility function $U(M, L^*)$ is $dU = U_M dM + U_L dL^*$ where $U_L = \frac{\partial U}{\partial L}$, $U_M = \frac{\partial U}{\partial M}$. Since L^* is constant, $dL^* = 0$. By assumption, $U_M > 0$. Hence $dU > 0$ if $dM > 0$. Thus, maximizing M is a necessary and sufficient condition to maximize U for given L^* . The profit maximizer and the utility maximizer each determines his net income curve by maximizing M subject to $Q = f(x_1, x_2, \dots, x_n, L^*)$ for various values of L^* . Hence, $M_\Pi = M_\Pi(L) = M_u = M_u(L) = M = M(L)$.

The question to be answered is the nature and implication of utility maximizing point and profit maximizing point. Utility function is $U(M, L)$, and $M = M(L)$. Substitute $M(L)$ for M in $U(M, L)$ to obtain $U(M(L), L)$. The conditions for maximum $U(M(L), L)$ are

$$\frac{dM(L)}{dL} = - \frac{U_L}{U_M} \quad (1)$$

and

$$\frac{d^2 M(L)}{dL^2} + \frac{d(U_L/U_M)}{dL} < 0 \quad (2)$$

These two conditions are satisfied at point p in Fig. 2.

On the other hand, $\Pi = M - M_I(L, K_I)$. Substitute $M(L)$ for M again to obtain $\Pi = M(L) - M_I(L, K_I)$. The conditions for maximum profit are

¹¹⁾ G. W. Ladd, op. cit., p. 480.

$$\frac{dM(L)}{dL} = \frac{dM_r(L, K_r)}{dL} \quad (3)$$

and

$$\frac{d^2 M(L)}{dL^2} - \frac{d^2 M_r(L, K_r)}{dL^2} < 0 \quad (4)$$

These conditions are satisfied at point p in Fig. 2. If relation (1)~(4) are all satisfied at the same value of L , profit maximization and utility maximization coincide at the same value of L . Ladd concluded that in order for these relations to be satisfied at the same value of L for every value of $dM(L)/dL$, it is necessary and sufficient that

$$\frac{dM_r(L, K_r)}{dL} = - \frac{U_L}{U_M} \quad (5)$$

for every value of L . Condition (5) means that the slope of curve I equals the slope of all other indifference curves at every value of L . It corresponds to Scitovsky's conclusion that "all indifference curves must have the same slope for each abscissa".¹²⁾ This nature of indifference curve is the most important for Scitovsky's argument. We can divide the entrepreneur's behavior into three stages. First, all indifference curves are horizontal. This is the case in which the entrepreneur is regarded as impersonal existence. In other words, it is the world where entrepreneurs as one social class are not considered. In this case, utility maximization always coincides with profit maximization. Secondly, Scitovsky's case, all indifference curves have the same slope for each abscissa. It means that the entrepreneur's choice is independent of his income and it is equivalent to Marshall's familiar assumption of a constant marginal utility of money. Thirdly, there is a more general case that the assumption of a specified type of indifference curve is removed. In this case, utility maximization can hardly coincide with profit maximization. Perhaps this case is seen in general.

3. RELATIONSHIP BETWEEN THE ASSUMPTION OF PROFIT OR UTILITY MAXIMIZATION AND OWNERSHIP

As we mentioned before, if we distinguish the behavior of business 'firm' from that of business 'man', the object to maximize for them will be different. If we depict indifference curves of business 'firm' as an agent in Fig. 2, they will be horizontal. Such a simplification that the only and the most important objective of a business firm as an agent is the profit will be allowed. Utility maximization and profit maximization

¹²⁾ as quoted before, Scitovsky op. cit., p. 59.

for the business firm as an agent always coincide.

Utility maximization is far more fundamental to price theory than is that of profit maximization as already mentioned. Therefore, the objective of entrepreneur as a person is the utility maximization. And if the objective of entrepreneur were the profit maximization, the profit would be the only factor of entrepreneur's utility function. In the argument of Scitovsky, the entrepreneur's utility function is shown as $U=U(M, L)$. M is the money income to be attributed to him. On the other hand, the net income brought by his activity is to be attributed to the firm and to be distributed for the owner. If the entrepreneur is an owner-manager, the firm's net income is attributed to him. So we are able to interpret that the entrepreneur in Scitovsky's argument is an owner-manager. In other words, it can be said that Scitovsky argued the relationship between the owner-manager's utility maximization and his profit maximization.

But if we treat the objective and the behavior of a pure manager who is distinguished from an owner-manager, it is different from Scitovsky's argument. The pure manager, who is not a factor owner, may have a different utility function. Even if the manager's utility function is $U = U(M, L)$, it is not necessarily said that the tangency of his indifference curve with the firms net income curve is the optimum point.

There will be two or three possibilities of modification in scitovsky's arguments. An extension of Scitovsky's argument which took of the possibility of hiring or selling managerial services by the owner-manager

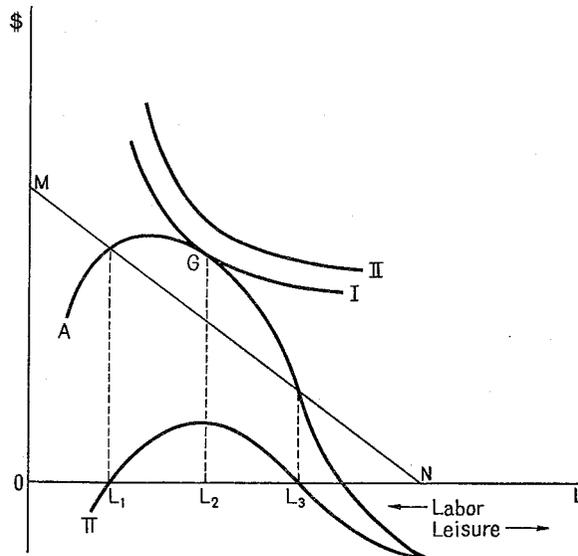


Fig. 3.

was shown by Yew-Kwang Ng.¹³⁾ He adds a line which he called market wage line on the same figure as Scitovsky's. In Fig. 3, the line MN shows it. "The slope of MN means the market-determined managerial wage rate that the owner-manager could earn if he decided to work as a hired manager".¹⁴⁾ And the income curve A is the same as Scitovsky's net income curve. But it is the case when the owner-manager operates his own firm. The difference between the income curve A and the market wage curve MN is the amount of profit Π .

In Fig. 4,¹⁵⁾ point G shows the maximum amount of profit. $M'N'$ is parallel to MN and touches A curve at G . The owner-manager can sell his labor at the market price to other firms or hire any amount of managerial services after reaching the tangency point G and can increase his utility. It needs not to say that the distance $M'M$ equals the maximum amount of profit since $M'N'$ is parallel to MN . Yew-Kwang concluded that, if the

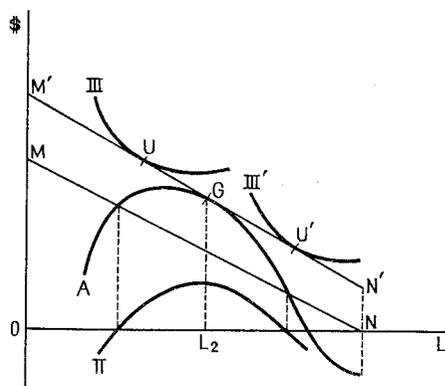


Fig. 4.

owner-manager is free to buy and sell managerial services, utility maximization also leads to profit maximization.¹⁶⁾ There is another case where the owner-manager cannot sell or buy managerial services, but that he is free to choose his level of work for his own firm. Managerial service market does not exist. In this case, his imputed wage is the opportunity cost of working which is the leisure foregone. Yew-Kwang says, "The problem is how to place a monetary value on the foregone leisure. One possible method is to take indifference curve I that passes through the point of zero amount of work N as the measure of his imputed wages".¹⁷⁾ This case is just equal to Scitovsky's Fig. 2.

Yew-Kwang continues with further arguments in his article, but the essence is already obvious. It would be more easily understood through his mathematical formulation.

Notations :

U = the utility functions of the owner-manager

¹³⁾ Yew-Kwang Ng, Utility And Profit Maximization By An Owner-Manager: Towards A General Analysis, *Journal of Industrial Economics*. Dec. 1974.

¹⁴⁾ *ibid.* p. 98, Fig. 1.

¹⁵⁾ Fig. 3 in his article.

¹⁶⁾ Yew-Kwang, *op. cit.*, p. 100.

¹⁷⁾ *ibid.*, p. 101, Fig. 4.

- M = his money income
 L = the amount of his leisure time
 T = total given amount of his time
 P = the parametrically given price of his product
 F = the output of his product
 p^i = similar price of his i th input
 x^i = quantity of the i th input used
 y = amount of managerial services used in his firm
 y^s = amount of managerial services supplied by himself to his firm
 y^h = amount of managerial services hired
 z = amount of managerial services he sells to other firms
 w = his imputed wage-rate for his services
 w^m = the market wage-rate for managerial services

The owner-manager's utility function is

$$(1) \quad U = U(M, L)$$

This is the same as Scitovsky's case formulated by Ladd.

$$(2) \quad M = PF(x^1, \dots, x^n, y) - \sum_{i=1}^n p^i x^i + w^m(z - y^h)$$

$PF(x^1, \dots, x^n, y)$ is the total revenue and $\sum_{i=1}^n p^i x^i$ is the total outlays. $w^m(z - y^h)$ is the difference between the amount of earnings which the owner-manager gains from other firms and the amount of payments for hired managerial services.

$$(3) \quad L = T - y^s - z$$

$$(4) \quad y = y^s + y^h$$

All variables must be non-negative. The owner-manager maximizes (1) subject to (2), (3) and (4). The following necessary conditions can then be derived.

$$(5) \quad PF_i - p^i < 0, = 0 \quad \text{or} \quad x^i = 0 \quad (i=1, \dots, n)$$

$$(6) \quad PF_y - w^m < 0, = 0 \quad \text{or} \quad y^h = 0$$

$$(7) \quad U_M PF_y - U_L < 0, = 0 \quad \text{or} \quad y^s = 0$$

$$(8) \quad U_M w^m - U_L < 0, = 0 \quad \text{or} \quad z = 0$$

Where a subscript denotes partial differentiation, e.g.,

$$F_i = \partial F / \partial x^i, \quad \text{etc.}$$

If $y^s \neq 0$, and either $y^h \neq 0$ or $z \neq 0$, namely, if the owner-manager inputs his managerial services to his firm and there is selling or buying of

managerial services, we can derive the following two equations either from the equality parts of (6) and (7), or (7) and (8),

$$(9) \quad U_L/U_M = w^m$$

$$(10) \quad PF_y = w^m$$

U_L/U_M is the slope of the indifference curve and PF_y is the slope of the manager's income curve. Remember, the market wage rate of managerial services, w^m , is the slope of MN . Therefore, (9) and (10) mean that the slope of the income curve must be equal to the slope of MN and the slope of indifference curve is also equated with the slope of MN . In the case when the possibility of buying and selling managerial services is excluded, conditions (6) and (8) become irrelevant, then we have from (7), provided $y^s \neq 0$

$$(11) \quad U_L/U_M = PF_y$$

namely, tangency point of two curves will be chosen for utility maximization.

On the other hand, the issue of profit maximization is to maximize Π subject to (2), (3) and (4). The profit of the owner-manager is given by

$$(12) \quad \Pi = PF(x', \dots, x^n, y) - \sum_{i=1}^n p^i x^i - w^m y^h - \int w dy^s$$

where w is this imputed wage rate which, in general, is not constant with respect to y^s . In Scitovsky's argument, it was shown by the indifference curve going through zero work point. But we should note that it equals w^m , when there is the market of managerial services, in Yew-Kwang's argument.

Maximization of (12) requires the following conditions.

$$(13) \quad PF_i - p^i < 0, = 0 \quad \text{or} \quad x^i = 0$$

$$(14) \quad PF_y - w^m < 0, = 0 \quad \text{or} \quad y^h = 0$$

$$(15) \quad PF_y - w < 0, = 0 \quad \text{or} \quad y^s = 0$$

Conditions (13) and (14) exactly duplicate (5) and (6). So we may consider (15) only. If the owner-manager is free to buy and sell managerial services at a constant market price w^m , his imputed wage w equals w^m . If $y^s \neq 0$, we have, from (15), $PF_y = w^m$ which is exactly equation (10). If the market for managerial services does not exist, his imputed wages w equals the slope of his indifference curve U_L/U_M . Hence, (15) gives $PF_y = U_L/U_M$ which is exactly equation (11).

Thus Yew-Kwang concludes, "The necessary conditions for profit maximization by the owner-manager's firm is exactly the same as those

for his personal utility maximization. Assuming the satisfaction of the second-order conditions, these necessary conditions also constitute the sufficient conditions. Hence, profit maximization must occur simultaneously with utility maximization. The acceptance of our argument means that the traditional theory of firm is on a strong ground at least for firms where ownership and control are closely related.¹⁸⁾

His argument is essentially the same as Scitovsky's except that he introduced to his model the possibility of selling or buying managerial services. In the case where the market for managerial services exists the imputed wages of the owner-manager can be regarded as the market price of managerial services. And if the market is perfectly competitive, the market price can be treated as a constant. Thus, Yew-Kwang could reach the conclusion that profit maximization must occur simultaneously with utility maximization without the assumption of specified indifference curves as in Scitovsky's argument.

However, as he pointed out, this argument is appropriate for firms where ownership and control are closely related. The owner-manager's profit is simultaneously the firm's profit. But, if ownership and control are separate, the argument would be otherwise. We may say that profit maximization assumption in the traditional theory corresponds to the economy where control by owner is the case and firm's profits always equal manager's profits.

However, there will be several types in owner-managed firms in modern corporation. For example, there is a case where the owner is also the manager, and there is another case where owners are stockholders and managers are hired. The latter case, we may call landlord type. On the other hand, there is the managerial discretionary firm in which the manager is not an owner and can manage the firm at his discretion. The separation of control from ownership is appropriate in this case. Therefore, we can divide firms other than owner-manager's into two types. One is the case where the firm is controlled by the owner and operated by the pure manager. The other is the case where the firm is discretionarily controlled by the pure manager. The former would rather be called an owner-directed firm than a manager-directed firm. The latter is purely a manager-directed firm. In the former—a type of absentee landlord—the goal of the firm is profits. Managers are directed by the owner (stockholder) to seek profits. If only the manager's managerial services are hired, he may be regarded as a worker who has managerial ability.

The amount of managerial services hired by the owner is L_2 in Fig. 4.

¹⁸⁾ *ibid.* p. 107.

In the firm of managerial discretion, the circumstances are otherwise. We can assume again that the manager's utility function is $U=U(M, L)$. But M in this case is no longer equal to the firm's net income. Manager's revenue depends on various factors, for example, firm's profit, amount of sales, scale of the firm. In recent studies managers' rewards were highly correlated to the scale of the firms operated. Therefore, in the firm of managerial discretion, the manager will seek the growth of firm.

O. E. Williamson has shown the managerial discretion model.¹⁹⁾ In his model the firm's objective is taken to be

$$U = U(S, \Pi - \Pi_0 - T)$$

S = staff (in money terms), or (approximately) general administrative and selling expense

Π = actual profit = revenue - production cost - staff

Π_0 = minimum (after tax) profit demanded

T = taxes

$\Pi - \Pi_0 - T = (1-t)\Pi - \Pi_0$ (t = tax rate) means managerial discretionary profit, including the manager's emoluments. Therefore, the manager's utility depends on the staff and managerial discretionary profit. He assumes that Π depends on the staff and the condition of the environment (a demand shift parameter). $\Pi = f(S, E)$.

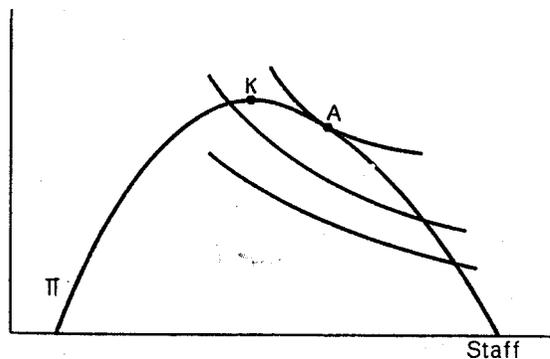


Fig. 5.

In Fig. 5, the point K represents the profit maximizing position and the point A represents the utility maximizing position. These two positions do not coincide under usual types of indifference curves. These circumstances will arise also in the case where the objective of a firm is sales

¹⁹⁾ O. E. Williamson, "Managerial Discretion Models", in *The Economics of Discretionary Behavior: Managerial Objectives in a Theory of Firm*, Chap. 4, 1964.

maximization, as in Fig. 6. Let the utility function $U=U(R, \Pi)^{20)}$

R = revenue

Π_0 = minimum demanded profit

Of course, $\Pi - \Pi_0$ is the managerial discretionary profit.

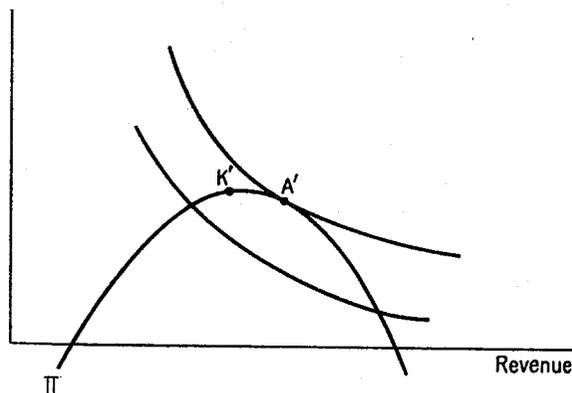


Fig. 6.

An increase both in revenue and staff is related to growth of firm. However, the leisure of manager is neglected in these types of utility functions, differing from Scitovsky's. Therefore, these utility functions seem to be as imperfect as an individual's utility function. But, in reality, the choice between income and leisure is relevant for hired managers. The behavior as a person is also relevant. However, the distinction between the objective of the manager as a person and that of the firm as an agent is not necessary in large modern corporation. It should rather be said that utility function of the manager is not consistent with utility function of the owner in the managerial discretion model. It would be better to treat the objective of the owner as a constraint for the manager.

4. THE BEHAVIOR OF THE FIRM CONTROLLED BY A GROUP OF THE FIRMS

In Japan, there are several groups of large firms which are in contact with each other. The ownership of those firms is different from previously mentioned types.

²⁰⁾ If $U=U(R, \Pi)$, U_{\max} is $\frac{dU}{dR} = \frac{dU}{d\Pi}$. But the sales maximization of W. J. Baumol treats the profit as a constraint. In this case we can show the following: Π_m is minimum needed profit.

If $\Pi > \Pi_m$, $\frac{dU}{dR} > \frac{dU}{d\Pi} = 0$

And if $\Pi < \Pi_m$, $\frac{dU}{d\Pi} > \frac{dU}{dR} > 0$

Generally speaking, degree of managerial discretion depends on whether large stockholders are there or not. In the managerial discretion firm or the manager controlled firm, equities are widely dispersed and large stockholders do not exist. In other words, behavior of firms is constrained by ownership. Therefore, the more stocks dispersed, the more managers who are separated from ownership become free from ownership.

TABLE 1. RATIO OF EQUITY OWNED BY MEMBER CORPORATIONS IN EACH GROUP

Mitsui Group		Mitsubishi Group		Sumitomo Group		Fuyō Group	
Corporation Number	The Ratio of Equity (%)	Corporation Number	The Ratio of Equity (%)	Corporation Number	The Ratio of Equity (%)	Corporation Number	The Ratio of Equity (%)
1	23.64	1	26.93	1	20.10	1	22.42
2	24.51	2	32.32	2	32.87	2	23.83
3	31.64	3	21.65	3	25.72	3	16.84
4	7.54	4	12.69	4	33.22	4	9.77
5	4.28	5	35.71	5	21.98	5	12.92
6	48.62	6	34.94	6	26.03	6	11.56
7	21.88	7	24.52	7	30.41	7	7.68
8	34.25	8	26.08	8	21.22	8	12.47
9	11.79	9	54.97	9	25.76	9	46.26
10	11.93	10	63.75	10	26.75	10	9.27
11	14.62	11	14.91	11	38.61	11	16.51
12	64.42	12	29.32	12	37.87	12	27.33
13	20.42	13	43.94	13	44.35	13	32.26
14	11.71	14	28.84	14	38.62	14	7.89
15	7.02	15	20.88	15	47.67	15	18.03
16	23.36	16	40.56			16	11.77
17	24.20	17	16.28			17	12.46
18	7.06	18	23.30			18	33.64
19	29.58	19	37.05			19	1.97
20	19.17	20	42.18			20	25.42
21	33.39	21	21.58			21	13.33
22	11.50	22	27.53			22	16.15
		23	36.80			23	10.59
						24	24.87
						25	43.44
						26	6.24
						27	11.75
						28	30.44

Source: Statistics about Group of Corporations, *Tokyō Keizai*, 1974.

In large Japanese corporations, managers appear to be not owner-managers but pure managers since large individual stockholders rarely exist. But in these large corporations, major stockholders are investors as agents for other large firms which belong to a group including those firms. Therefore, equities of major corporations are mutually owned by other firms which belong to the same group. Table 1 shows the ratio of equities owned by the group to which the firm belongs, in total equities of the firm. There are about six large groups. Mitsui group, Mitsubishi

MITSUI GROUP		MITSUBISHI GROUP	
Number	Name	Number	Name
1	The Mitsui Bank, Limited	1	The Mitsubishi Bank, Ltd.
2	The Mitsui Trust & Banking Company, Ltd.	2	The Mitsubishi Trust and Banking Corporation
3	Taisho Marine and Fire Insurance Company, Ltd.	3	The Tokyo Marine and Fire Insurance Company Ltd.
4	Mitsui Mining Co., Ltd.	4	Kirin Brewery Company, Limited
5	Hokkaido Colliery & Steamship Co., Ltd.	5	Mitsubishi Rayon Company, Limited
6	Mitsui Construction Co., Ltd.	6	Mitsubishi Paper Mills, Ltd.
7	Sanki Engineering Co., Ltd.	7	Mitsubishi Chemical Industries Ltd.
8	Nippon Flour Mills Co., Ltd.	8	Mitsubishi Gas Chemical Company, Inc.
9	Toray Industries, Inc.	9	Mitsubishi Petrochemical Company, Limited
10	Oji Paper Co., Ltd.	10	Mitsubishi Plastics Industries Limited
11	Mitsui Toatsu Chemicals, Inc.	11	Mitsubishi Oil Company, Ltd.
12	Mitsui Petrochemical Industries, Ltd.	12	Asahi Glass Company, Limited
13	The Japan Steel Works, Ltd.	13	Mitsubishi Mining & Cement Co., Ltd.
14	Mitsui Mining and Smelting Co., Ltd.	14	Mitsubishi Steel Mfg. Co., Ltd.
15	Tokyo Shibaura Electric Co., Ltd.	15	Mitsubishi Metal Corporation
16	Mitsui Shipbuilding & Engineering Co., Ltd.	16	Mitsubishi Kakoki Kaisha, Ltd.
17	Mitsui & Co., Ltd.	17	Mitsubishi Electric Corporation
18	Mitsukoshi, Ltd.	18	Mitsubishi Heavy-Industries, Ltd.
19	Mitsui Real Estate Development Co., Ltd.	19	Nippon Kogaku K. K.
20	Mitsui O. S. K. Linds, Ltd.	20	Mitsubishi Corporation
21	The Mitsui Warehouse Co., Ltd.	21	Mitsubishi Estate Company, Limited
22	Toyota Moter Co., Ltd.	22	Nippon Yusen Kabushiki Kaisha
		23	Mitsubishi Warehouse & Transportation Co., Ltd.

group, Sumitomo group and Fuyō group are the big four. They formed financial cliques until dissolved at the end of World War II. Equities of firms which belong to those groups are about 30 or 40 percent owned by the group. Of course firms of a group are connected not only by mutual ownership but also by financing or other factors. Therefore, several firms,

SUMITOMO GROUP		FUYŌ GROUP	
Number	Name	Number	Name
1	The Sumitomo Bank, Ltd.	1	The Fuji Bank, Limited
2	The Sumitomo Trust & Banking Co., Ltd.	2	The Yasuda Trust and Banking Company, Limited
3	The Sumitomo Marine and Fire Insurance Company, Limited	3	The Yasuda Fire and Marine Insurance Company, Limited
4	Sumitomo Coal Mining Co., Ltd.	4	Taisei Corporation
5	Sumitomo Chemical Company, Limited	5	Nissin Flour Milling Co., Ltd.
6	Nippon Sheet Glass Co., Ltd.	6	Sapporo Breweries Limited
7	Sumitomo Cement Co., Ltd.	7	Nippon Reizo Kabushiki Kaisha
8	Sumitomo Metal Industries, Ltd.	8	Nissin Spinning Co., Ltd.
9	Sumitomo Metal Mining Co., Ltd.	9	Toho Rayon Co., Ltd.
10	Sumitomo Electric Industries, Ltd.	10	Sanyo-Kokusaku Pulp Co., Ltd.
11	Sumitomo Shipbuilding & Machinery Co., Ltd.	11	Showa Denko K. K.
12	Nippon Electric Co., Ltd.	12	Kureha Chemical Industry Co., Ltd.
13	Sumitomo Shoji Kaisha, Ltd.	13	Nippon Oil and Fats Co., Ltd.
14	Sumitomo Reality & Development Co. Ltd.	14	Toa Nenryo Kogyo Kabushiki Kaisha
15	The Sumitomo Warehouse Co., Ltd.	15	Nippon Cement Co., Ltd.
		16	Nippon Kokan K. K.
		17	Kubota, Ltd.
		18	Nippon Seiko K. K.
		19	Hitachi, Ltd.
		20	Oki Electric Industry Company Limited
		21	Yokogawa Electric Works, Limited
		22	Nissan Motor Co., Ltd.
		23	Canon Inc.
		24	Marubeni Corporation
		25	Tokyo Tatemono Co., Ltd.
		26	Tōbu Railway Co., Ltd.
		27	Keihin Electric Express Railway Co. Ltd.
		28	Showa Line, Ltd.

the ratio owned by the group being small, are included in the group. On the other hand, several firms, having high ratio, are newly established firms, for example, corporation number 12 in Mitsui group (Mitsui Petrochemical Industries, Ltd.) and Number 10 in Mitsubishi group (Mitsubishi Plastics Industries Limited). These are also new industries developed since the 1950's.

Owing to the definition of Berle-Means, in the manager-directed firm, the ratio of equity owned by a person or a family is below 20 percent. Therefore, large Japanese firms which belong to a group of firms are not manager-directed but owner-directed in some sense. What is the goal of such firms, then? In considering this, we must take into account the behavior of firms as a group. In the periods of rapid growth from 1950 to 1970, behavior of each group was increase of economic activities both quantitatively and qualitatively. Most groups have attempted entry into new industries. Therefore, market competition has been keen. In those periods, we can say the main objective of each group was growth of the group itself. However, recently it is apparent that behavior of each group is changing from competition to collusion. In such a situation, objective of the group is profit maximization as a whole group. Therefore, the group of owners direct their firms with the profit motive.

Managers in these firms are very faithful to their firms. If the group's objective is growth, managers also seek growth of their firms. But, utility function may be $U=U(M, L)$ as before. On the other hand, managerial services are less mobile than in other advanced countries. Therefore, it is difficult for a managerial market to be formed, so that market price of managerial services cannot exist. The rewards for the manager depend on the scale of the firm, so that the growth of the firm

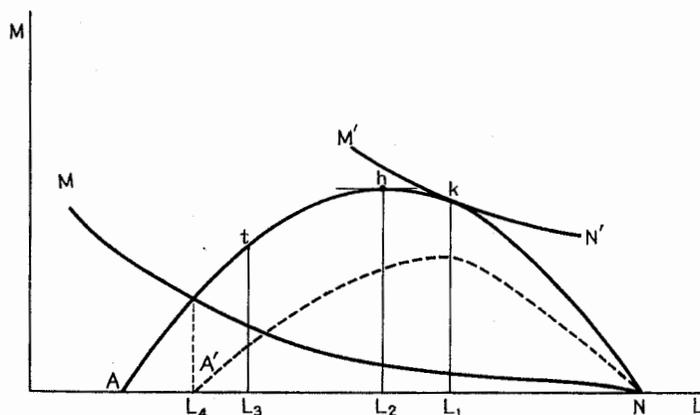


Fig. 7.

brings more rewards to the manager. Therefore, behavior of the firm will lean toward sales maximization more than profit maximization.

Fig. 7 shows the profit maximizing point and sales maximizing point. MN is manager's reward curve. h is the point of profit maximization, including the manager's reward. k is also the point of profit maximization, excluding the manager's reward, provided $M'N'$ is parallel to MN . t is the point which corresponds to sales maximization. A curve represents total revenue minus total outlay which is brought by the manager's activity. A' curve represents firms' net income minus manager's rewards. On the other hand, manager's indifference curves have such features. Marginal rate of substitution is very small within a limit since managers are faithful to their firms.

REFERENCES

1. H. T. Koplin, "The Profit Maximization Assumption", *Oxford Economic Papers*, July 1963.
2. G. W. Ladd, Utility Maximization Sufficient for Competitive Survival", *Journal of Political Economy*, July/August 1969.
3. Yew-Kwang Ng, Utility And Profit Maximization By An Owner-Manager: Towards A General Analysis, *Journal of Industrial Economics*, Dec. 1974.
4. M. W. Reder, "A Reconsideration of the Marginal Productivity Theory", *Journal of Political Economy*, Oct. 1947.
5. T. Scitovsky, "A Note on Profit Maximization and Its Implication", *Review of Economic Studies*, 1943.
6. O. E. Williamson, *The Economics of Discretionary Behavior: Managerial Objectives in a Theory of the Firm*, 1964.