

THE COST OF CAPITAL AND THE CAPITAL STRUCTURE : THE RESEARCHING PROCESS OF EQUILIBRIUM AND THE INSTITUTION

MASATO KAMEKAWA

1 INTRODUCTION

The objective of corporate finance is to maximize stockholders' wealth. What stockholders' wealth means is the value of corporate capital. Certainly, we take it for granted that corporate capital must earn profits. If it is not able to earn profits, it is not corporate capital. In other words, corporate capital has value, since it produces profits. Thus, profit maximization is equivalent to stockholders' wealth maximization.

Recently, however, in managerial capitalism or managerial theory of the corporation, managerial objectives have been emphasized. These theories are not necessarily the same, but it is a characteristic commonality where they stress the utility of management over stockholder's wealth as a firm's objective. We think that by too much emphasis of managerial utilities or behaviors we come to neglect the market.

On the other hand, in equilibrium models of markets such as perfect competition, profit means normal profits, neglecting the managerial objectives. In these models, markets are depicted as being in equilibrium, with firms maximizing their profits or stockholder's wealth. As a result of actions of competitive firms, however, the profitability or the rate of return in all firms has to be equal. When these rates change, a new equilibrium is established in a moment. This means that the theory ignores the equilibration process. In this theory, all market participants are price takers, and market is efficient.

Obviously, in the real world, many assumptions of these models appear unrealistic. Economic agents or decision makers do not possess perfect information. They are not able to measure all of the risks that face them. In addition, they are not able to enter the market freely and to exit from the market freely. If they had been able to do so, all sorts of institutions and laws in the financial market or capital market

would not have evolved at least as well as today. We must insert realistic factors into the market theory.

Through the institutions of stock corporation and the stock exchange, suppliers of the equity capital have reduced the risks and the transaction costs. Similarly, institutions such as a board of directors would influence these costs. The relation between management and stockholder occurs the agency cost. Financial institutions like banks also has reduced the risks and the transaction costs of debt suppliers. By all institutional factors, economic agents search for an equilibrium reducing the risks and the transaction costs. Through reduction of the transaction costs including the risks, capital is supplied easily.

The reason why management has been needed is important. The process of a plan-do-see named Management Cycle would be not needed when the markets were always assumed to be in equilibrium. Management as an agent instead of capital suppliers as a principal collects the information of the market, analyzes it, and tries to search for the market equilibrium. This means that the management is an assistance of the market functions. Especially, financial management is an assistance of the financial market function.

Of course, management produces another costs such as agency costs. However, management will increase values of corporate capital as long as benefits of management exceed these costs. Then, management will raise the capital supplier's wealth. In this point, there is a significance that management exists.

This paper studies the effect of various institutions, risk or uncertainty and disequilibrium on the cost of capital. The cost of capital is a price of capital market. Is its price in equilibrium? How do we measure it if it is in equilibrium? This problem is sophisticated. In a way, we can assume the equilibrium price. It is the static analysis. We can ignore the time in this analysis. However, we must act with time. Our actions take time. Each time we do something, we will move to a new equilibrium. In this moving process, namely, disequilibrium, we decide actions in relation to information including the behaviors of others. Information has risk or uncertainty. Then there are relations between institutions and risk or uncertainty.

Likewise, Disequilibrium occurs by institutions and risk or uncertainty because economic agents or market participants do not know what the market-clearing price is. Therefore, measuring the cost of capital is very difficult by their reciprocal actions. But without measuring the cost of capital, economic agents would not be able to decide optimum

decision-makings. In order to do optimum management, we shall state what we think that the management or institutions have done.

First, we will explain the concept of the cost of capital. We will mention not only a general interpretation here but also a peculiar explanation including institutional factors. Second, MM (Franco Modigliani & Merton H. Miller) propositions as an equilibrium theory will be considered in brief⁽¹⁾. In this place, we will consider the relationships between the cost of capital and the capital structure in the equilibrium of the capital market. The following is our theory including various factors such as the institution, uncertainty, etc.

2 THE CONCEPT OF THE CAPITAL COST

Generally, the management of Japanese firms tends to regard capital cost as a cash expenditure to the capital supplier. However, this is a mistake. The dividend is not all of the stockholder's cost of capital. It is rather important for the stockholder to earn a capital gain. There is the concept of the opportunity cost in the background of this thought. Opportunity cost is the highest revenue (benefit or return) forgone when a resource or factor of production is withdrawn or withheld from alternative production.

The capital supplier has many objects of investment. He can deposit his money in a bank. He can lend it to his friend. Or he can buy a bond. In each case, he will be paid interest. He can also found an enterprise. Then he will earn profit. Hence, if you will want to use his capital, you ought to pay his opportunity cost. Without a reasonable payment, he does not provide you the capital. So, the capital supplier's opportunity cost is compensated.

Therefore, the capital demander, that is to say, the firm must earn a profit over the capital supplier's opportunity cost. This problem is considered as a capital budgeting problem. Capital budgeting decisions have a major impact on the firm, and proper capital budgeting requires an estimate of the cost of capital. As is well known, the cost of capital is the acceptance criterion for capital investments. We know in theory that it should be the rate of return on a project that will leave the market price of the company's stock unchanged.

By the way, when the capital supplier provides the capital, he must try to measure all sorts of returns and costs. Nevertheless, it is very difficult. Because uncertainty

exists, he can not predict the object of investment exactly. In spite of this difficulty, he would try to calculate the expected profits. In the process of this calculation, he must consider all of the costs to earn returns, including risks and transaction costs or agency costs. Capital suppliers will intend to increase their wealth by selecting objects minimizing the costs and maximizing the returns.

The behaviors of these investors decide where the capital will be invested. Consequently, the value of the corporation that was able to finance the capital would be raised. Oppositely, the corporation would lose value when it was not able to finance the capital. This process is to measure the opportunity cost of the capital supplier at the same time. Because estimating the value of corporation is to predict the price of the stock, it is equal to estimating the cost of capital, too. Thus, it is important for the management of firms to predict the stock price.

As discussed previously, the cost of capital is the rate of return on a project that will leave the market price of the company's stock unchanged. The effect of decisions on stock price, however, is not found in practice. We do not know what the market-clearing price of the stock is. As a result, estimating the appropriate required rate of return becomes difficult. We can only know whether stock price rose consequently, or, how much projects earned profit. Still, it is important for the stockholder, management and other market participants to understand the relations between the stock price and the capital cost.

The corporate capital consists of two sorts of capital: liability or debt and equity capital. If there were not risks or uncertainty in the world, both types of capital would be equivalent. Then the capital would be required to gain profitability as well as interest rate. In this world, the opportunity cost of capital suppliers would be a risk-free interest rate. The corporate profits must cover interest charges and provide interest as an acceptable return to the capital supplier.

Then the value of capital must be measured by interest. Because capital produces interest and what does not produce interest is not capital, the value of capital is formed from the sum of future interest. Thus we need to calculate the present value of profits that the capital will earn in the future. Since profits and interest are equal, the present value discounting future profits have to be equal to the book value representing the replacement cost of assets (= capital). Using Torbin's q , q is always equal to 1. (where $q = \text{present value} / \text{book value}$ or $\text{market value} / \text{replacement cost}$) The relationship between q and the capital cost is shown in the simplified expression

below.

$$q = 1 \Leftrightarrow r/k = 1 \quad (1)$$

where r = rate of return on assets, k = capital cost.

For a firm as a whole, there is an aggregation of assets. These assets have different characters. Consequently, the use of an overall cost of capital as the acceptance criterion for investment decisions is appropriate only under certain circumstances.

In the real world, however, we are not able to restrict ourselves to investment decisions under conditions of complete certainty. There is risk or uncertainty. Therefore, we must extend the cost of capital to include risk and uncertainty. These circumstances are that the assets of the firm are not homogeneous with respect to risk and that projects of investment are of the different characters. If projects vary widely with respect to risk, the cost of capital for the firm as a whole is not appropriate as an acceptance criterion.

Nevertheless, using the overall cost of capital is its simplicity. Once it is computed, projects can be evaluated using a single rate that does not change unless underlying conditions change. This avoids the problem of computing an individual required rate of return for each project. This reason is because an information cost exists. It is the cost needed to measure the cost of capital exactly. If we can afford to spend more time on this cost, we can reduce the risk. In place of that, the cost might increase.

Ordinarily, it is assumed that investors have an aversion to risk and uncertainty. The risk might be measured by the information cost. Of course, uncertainty can not be measured. In any case, risk and uncertainty influence the cost of capital and raise it. capital cost becomes a function of interest and risk.

However, they have not only negative factors of the value, but also positive factors. If there were risks or uncertainty, objects of investment over the cost of capital would not exist. Since there are risks or uncertainty, q exceeds 1. Using a statement as mentioned before, this is shown in the following.

$$q > 1 \Leftrightarrow r > k \quad q < 1 \Leftrightarrow r < k \quad (2)$$

When risks exist, capital suppliers must select projects corresponding to risks. He who was successful in his selection would increase his wealth. Generally, the relationship between risk and return is a trade-off. The project with high risks expects a high return. When the expected return is high, the project has high risks. This means that the capital cost of high risk objects is high.

Moreover we must consider the cost of the individual components of the capital structure such as debt, preferred stock and equity. Because capital suppliers perceive different classes of securities as having different degrees of risk, there are variations in cost of the different types of securities. Ordinarily, investment in equities is expected to have the highest return and the highest risk. This corresponds to the large fluctuation of stock price. In contrast, investment of debt has a low return and relatively low risk. Debt price does not fluctuate as largely as stock price. Hence, firms with different capital structures might have different capital costs.

We will show that the cost of capital, calculated as a weighted average, is the rate of return that must be earned so that the value of the firm and the market price of its common stock do not decline.

Capital structure can affect both the size and the riskiness of the firm's earnings stream. This might change the value of the firm. A knowledge of how the capital cost is influenced by financial leverage is important in making capital structure decisions. We will see the MM propositions that capital structure has no relationship with the cost of capital.

3 THE THEORY OF THE CAPITAL STRUCTURE

Now we approach the question of how much debt a firm should have in its capital structure. The key question with which we are concerned is whether a firm can affect its total valuation and its cost of capital by changing its financing mix. Changes in the financing mix are assumed to occur by issuing debt and repurchasing stock, by issuing stock and retiring debt or by retained earnings. The problem is what happens to the valuation of the firm and to its overall required return when the ratio of debt to equity, or degree of leverage, is varied.

In this discussion, the most famous theory is MM theory that was published in 1958. In spite of much controversy surrounding the issue, MM demonstrated that capital structure and capital cost are independent of each other in the equilibrium theory of the capital market. However, it was assumed that taxes did not exist. Given the investment policy of the firm, the value of the firm is not settled by financing, but settled by valuation of investment assets.

The market value of an automobile, for example, is settled in the car (used car) market that judges whether it is a good car or a bad car and prices it. Its valuation

has no relation with the problem of how the automobile is financed. Here, debit item of balance sheet, the automobiles as assets are object of valuation, while credit side of balance sheet, how to finance it has no meaning.

Now, assume that net operating incomes and net incomes are not expected to grow and that all of them are paid out to stockholders in the form of dividends. In other words, the dividend-payout ratio is 100%. By this assumption, we are not permitted to consider influence on the capital structure of retained earnings. Let us consider the costs of the individual components of the capital structure such as debt and equity and the overall capitalization rate.

The first is

$$k_i = I/D \quad (3)$$

where I = annual interest expense and D = Market value of debt outstanding. In the equation, k_i is the yield on the debt and the cost of debt.

The second is

$$k_e = E/S \quad (4)$$

where E = Earnings available to common stockholders and S = Market value of stock outstanding. The value of k_e is the cost of equity only when the dividend-payout ratio is 100%. It also is equal to the earnings/price ratio and represents the market rate of discount that equates the present value of the expected future dividends with the current market price of the stock.

Finally, the overall capitalization rate is defined. It is

$$k_o = X/V \quad (5)$$

where X = earnings before interest (net operating income) and V = total market value of the firm and $V = S + D$. Thus, k_o is defined as the weighted average cost of capital and is expressed as

$$k_o = k_i (D/V) + k_e (S/V) \quad (6)$$

MM argue that k_o remains constant throughout all degrees of leverage, because the total risk of all security holders is not altered by changes in the capital structure. Therefore, the total value of the firm must be the same.

When D/V or S/V change, k_e is adjusted so as to hold k_o constant. From equation (6), k_e become below.

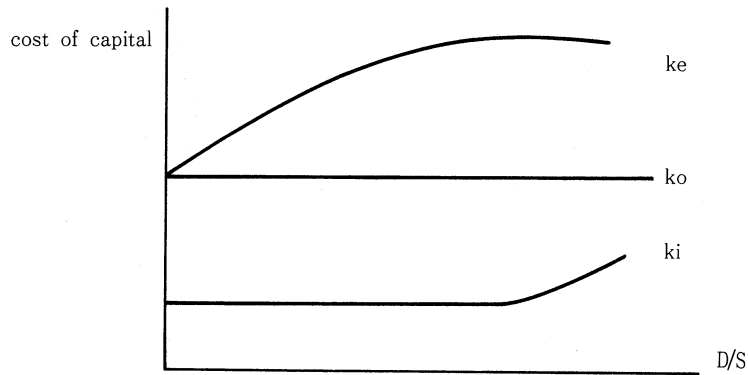
$$k_e = k_o - (k_o - k_i) D/S \quad (7)$$

Of course, k_i also changes. As D/V rises gradually, k_i will increase, too. If there were the firm without equity capital, k_i would be equal to k_o because creditors take

risks instead of stockholders. The adjusting process by ke is accomplished as though it were automatic, including changes of ki .

Equation(6) and (7) are shown by figure(1) below.

Figure (1)



The equilibrium market theory assumes that this adjusting process is timeless and costless. In MM theory, this process is the arbitrage. According to MM's assumptions, investors who have possessed perfect information have evaluated the values of firms from the beginning. At this time, if there were a difference between the values that must be equivalent, investors certainly would earn arbitrage profits.

4 RELATIONS BETWEEN COORDINATING FUNCTIONS OF MARKET AND MANAGEMENT

This result is simple and clear. Then it is not fundamentally wrong. However, we must consider more realistic factors as market imperfections. One of them is tax problems. The influence of the corporation tax or the income tax is important for the discussion of the capital cost and the capital structure and, to date, many studies treated tax have been published(2).

In particular, using the debt, since interest expense is regarded as the accounting cost, firms can save the tax. Thus, including the tax problems, the proposition of MM must be corrected as the following(3). That is to say, to maximize the value of the firm and the stockholder's wealth, the firm must finance the debt as much as possible.

This conclusion does not correspond to the practice of firms. It is exceptions such as M & A that found the firm with debt close to 100%. Tax credit as the interest expense is, the firm does not select a decision as putting D/V close to 1. Therefore,

we also ought to think about other factors under a given tax system. Hereon, we shall consider the Japanese financial market and the management of Japanese firms in terms of imperfect elements except for tax problems(4).

Now, it is the most concern whether arbitrage will be possible or not. MM assumed two firms alike in every respect excepting capital structure. As arbitrage will be accomplished, it will make the value of the two firms equal. This is a natural result under the conditions of equilibrium market.

However, accomplishment of arbitrage is difficult in practice. As we have stated repeatedly, the problem that we must solve is not a result of arbitrage but a process of it. For example, the deference between individuals and firms is recognized by all participants in the market. Individuals and firms have different terms that either lend or borrow.

Also, While individuals are unable to collect the information sufficiently and to analyze it appropriately, firms that employ many specialists and have an abundant assortment of information machines are comparatively able to gather it easily and to interpret it adequately. Compared with natural person, the cost of capital of legal person (corporate body) is lower. There are economies of scale. Usually, the larger the scale of investment or financing, the cheaper the commission. Limiting the scale, will course the commission to be higher.

These are reasons that the bank exists. In a sense, the bank function as a information center. Depositors as small capital suppliers can not bear the burden of the information cost. Then instead of many small depositors, the bank as an organization shares the information cost so that the financial system can reduce its cost. Similarly, to finance from many small capital suppliers is costly. This transaction cost as a commission also is reduced by the bank. Obviously, these reductions of the cost have influence on the cost of capital. A meaning that the bank exists is these cost reductions.

In addition, the Japanese bank system that is known as a main bank system share part of functions of the capital market. We recognize that the Japanese capital market has not matured fully. As a result, there are many market failures, so that the price mechanism of the market does not operate appropriately.

We shall assume that the pricing of equity capital is relatively inelastic to information over the time period. This assumption means that the information cost is high for market participants, for special institution about price of securities does not develop fully. Many security analysts also will be required that the market is efficient. Of

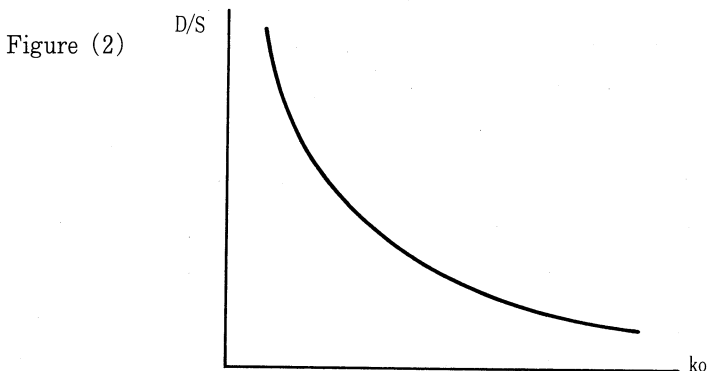
course, the pricing will become elastic in terms of the long-run. However, The concept of long-run is ambiguous in the equilibrium market. Holding other factors constant, equilibrium is accomplished by price mechanism. But in the long-run, other factors are changed so that the long-run equilibrium is only an expectation. In practice, the market must be assumed to be in disequilibrium.

Without the special institution, individuals will not understand not only how firms interact with one another as they attempt to achieve its goals, but also how firms interact with the environment in which they operate. They can not appraise the future profits and its risks appropriately, because they can not gain the required information rapidly. Naturally they will not be informed of changes in the capital structure. They can not evaluate not only the business risk, but also the financial risk.

However, as far as the failure of capital market is there, someone must make up its failure. It is the main bank that fulfills its supplemental function. The main bank collects information of the firm that has close relations with main bank, analyzes it and decides whether should lend money. Ordinary main bank is a large stockholder of that firm. Therefore whenever the bank will try to gain the information, it will be able to acquire it cheaper than other economic agents.

Now let's assuming that investors require same rate of return concerning investments to equity capital of all firms. This assumption means that there is a single required rate of return as if they invested in the Nikkei 225. Investors require it to all of individual securities. An assumption of the single standard is to simplify problems. Perhaps as it is, there would be not a single standard. The cost of equity would be classed by a difference of scale, industry, diversification, etc. The cost of equity might be different, but the classed cost will not vary over a given period. This is a mean of inelastic.

In the first place k_o is constant even though the capital structure is changed under these assumptions. This is equivalent to MM proposition. However, Who researches k_o is not investors that participate in the capital market, but the main bank. Investors in the capital market are in passive positions. In the next place it is important to distinguish our assuming k_e from it of MM. Herein, k_e is a constant and independent variable. k_i had been decided mainly by the regulated interest till recently. These days k_i is decided by the financial market, but the bank appears to play a positive part. At any rate, assume that k_i also is given. This treatment is fundamentally equal to MM. These relations is indicated by figure(2).



Under these assumptions, from equation(6) it follows that D/V or S/V is

$$D/V = (ke - ko) / (ke - ki) = 1 - (ko - ki) / (ke - ki) \quad (8)$$

$$S/V = (ko - ki) / (ke - ki) = 1 - (ke - ko) / (ke - ke) \quad (9)$$

From equation(7), leverage(= D/S) is shown by the following.

$$D/S = (ke - ko) / (ko - ki) = (ke - ki) / (ko - ki) - 1 \quad (10)$$

$$d(D/S) / d(ko) = -1 / (ko - ki) < 0 \quad (11)$$

On equation(11) we understand that D/S is a decreasing function of ko .

For example, suppose three firms X, Y and Z whose ko is 8%, 10% and 12% and that ke of all is 15% and ki of all is 5%. Substitute a set of assumed parameter values into the equation (6). An answer that was requested in MM theory was ke at given D/V or S/V . Now what we want to answer is D/V or S/V at given ke . As a result, the capital structure of the firm X whose ko is 8% is $D/V=70\%$ ($S/V=30\%$), the firm Y of $ko =10\%$ is $D/V =50\%$ ($S/V=50\%$) and the firm Z of $ko=12\%$ is $D/V=30\%$ ($S/V=70\%$). See figure(3).

Figure (3)

(X) B/S	(Y) B/S	(Z) B/S
A=100	A=100	A=100
D=70	D=50	D=30
S=30	S=50	S=70

That answer is very simple. However, as far as the market is in disequilibrium, the main bank and the management of the firm must research optimum capital structure. This researching process is a process of maximizing the firm's value or stockholder's wealth. In other hand, this process for the main bank also is a process of maximizing the bank's value.

We think that this hypothesis is proved indirectly by a statistical study of Wakasugi. His study was to find a relationship between operating incomes to total assets and leverage, using data from 1965 to 1984. The result of his statistical analysis was generally accepted⁽⁵⁾.

Likewise, we tried to prove this hypothesis by regression statistics. In this analysis, we used a 10-year time series of financial indicators by industry group that was written in the *Handbook of Industrial Financial Data 1993* ⁽⁶⁾, and tested the data from 1983 to 1992. First, we examined the regression relation between operating incomes to operating assets (OIOA) and its standard deviation (OIOASTD), because of examining the relation between the return and the business risk. Hereon, OIOA and OIOASTD are substitutions of *ko*. We were satisfied with the result of the examination. The result is the following.

$$\begin{aligned} OIOA &= 4.329 + 1.282 OIOASTD & R^2 &= 0.9111 & \text{degrees of freedom} &= 26 \\ \text{the standard error of the estimate} &= 1.9005 \\ \text{the standard deviation of the estimated coefficient of } OIOASTD &= 0.0785 \\ \text{t-statistic} &= 16.3251 \end{aligned}$$

Second, we investigated the relation between liabilities to equity (LE) and OIOA. LE is estimated by book-value, but essentially must be evaluated by market-value. Therefore, LE is a substitution of the market-value of D/S. As were expected, the coefficient of determination was low, but the correlation coefficient was minus ($r < 0$), namely there was an inverse relation. We also tested the relation between long-term liabilities to equity (LLE) and OIOA. These results are shown as follows:

All Industries

$$\begin{aligned} LE &= 353.049 - 10.671 OIOA & R^2 &= 0.125 & \text{degrees of freedom} &= 26 \\ \text{the standard error of the estimate} &= 179.99 \\ \text{the standard deviation of the estimated coefficient of } OIOA &= 5.5375 \\ \text{t-statistic} &= -1.927 \end{aligned}$$

Manufacturing Industries

$$\begin{aligned} LE &= 474.144 - 42.339 OIOA & R^2 &= 0.2881 & \text{degrees of freedom} &= 15 \\ \text{the standard error of the estimate} &= 100.9086 \\ \text{the standard deviation of the estimated coefficient of } OIOA &= 17.1832 \\ \text{t-statistic} &= -2.464 \end{aligned}$$

Non-Manufacturing Industries

$LE = 485.611 - 13.513OIOA$ $R^2 = 0.2819$ degrees of freedom = 9
 the standard error of the estimate = 221.7763
 the standard deviation of the estimated coefficient of $OIOA = 7.189$
 t-statistic = -1.8796

All Industries

$LLE = 110.943 - 1.9OIOA$ $R^2 = 0.0214$ degrees of freedom = 26
 the standard error of the estimate = 81.9373
 the standard deviation of the estimated coefficient of $OIOA = 2.5207$
 t-statistic = -0.7539

Manufacturing Industries

$LLE = 143.65 - 12.5468OIOA$ $R^2 = 0.228$ degrees of freedom = 15
 the standard error of the estimate = 35.0079
 the standard deviation of the estimated coefficient of $OIOA = 5.9613$
 t-statistic = -2.1047

Non-Manufacturing Industries

$LLE = 172.17 - 3.3198OIOA$ $R^2 = 0.0882$ degrees of freedom = 9
 the standard error of the estimate = 109.7563
 the standard deviation of the estimated coefficient of $OIOA = 3.5578$
 t-statistic = -0.9331

Next we saw the relation between LE and $OIOASTD$ and between LLE and $OIOASTD$. The result did not come up to our expectations.

All Industries

$LE = 297.061 - 9.411 OIOASTD$ $R^2 = 0.0539$ degrees of freedom = 26
 the standard error of the estimate = 187.165
 the standard deviation of the estimated coefficient of $OIOASTD = 7.7321$
 t-statistic = -1.2172

Manufacturing Industries

$LE = 216.554 + 2.659 OIOASTD$ $R^2 = 0.0002$ degrees of freedom = 15
 the standard error of the estimate = 119.5893
 the standard deviation of the estimated coefficient of $OIOASTD = 55.4135$
 t-statistic = 0.048

Non-Manufacturing Industries

$LE = 412.147 - 13.999 OIOASTD$ $R^2 = 0.17386$ degrees of freedom = 9
 the standard error of the estimate = 237.875

the standard deviation of the estimated coefficient of *OIOASTD* =10.1719

t-statistic = -1.3762

All Industries

$LLE = 103.565 - 2.8053 \text{ OIOASTD}$ $R^2 = 0.0259$ degrees of freedom = 26

the standard error of the estimate = 81.7503

the standard deviation of the estimated coefficient of *OIOASTD* = 3.3772

t-statistic = -0.8306

Manufacturing Industries

$LLE = 43.988 + 17.4037 \text{ OIOASTD}$ $R^2 = 0.0592$ degrees of freedom = 15

the standard error of the estimate = 38.645

the standard deviation of the estimated coefficient of *OIOASTD* = 17.9067

t-statistic = 0.9719

Non-Manufacturing Industries

$LLE = 160.513 - 5.1793 \text{ OIOASTD}$ $R^2 = 0.1234$ degrees of freedom = 9

the standard error of the estimate = 107.619

the standard deviation of the estimated coefficient of *OIOASTD* = 4.6019

t-statistic = -1.1255

Finally, we examined the relation between return on equity (ROE = net income after income taxes / stockholders' equity) and its standard deviation (ROESTD), and between LE or LLE and ROESTD. There were little relationship. We think that these results support our hypothesis.

5 CONCLUSION

We saw the capital cost and the optimum capital structure. The capital cost is not only a function of interest and risks, but also a function of the institutions. What the institutions mean in our concept is all of the costs that influence the capital cost. In general, the institutions mean the business firm, the financial institution, etc.

Hereon, the market is also one of institutions. How to trade is decided by the framework such as the law or the customs surrounding the market, too. Interactions between the firm and the market come to decide the cost, including the transaction cost and the agency cost. In particular, interactions between the financial or the capital market and the firm are important.

Until the early twentieth century, shareholders were wealthy individuals. Nowadays,

however, the most important shareholders are not individuals but financial institutions such as insurance companies, pension funds, investment and unit trusts in UK or US. In Japan, corporations and banks became important shareholders. These stock ownership structures influence interactions between the firm and the market.

Today this problem is considered as a one of the corporate governance problems. The motivations of stockholders would affect how to trade share, price it or pressure the management. The motivations of Japanese dominant stockholders differ from those in the UK or US. These differences would appear as a gap of the cost of capital. In addition, the institution also contains the inside of the firm as an organization considering the management. Clearly how to manage affects the costs. Therefore, involvement of the institutions is to research the minimization of the costs.

As we saw now, our meanings of the institution vary widely. For use in managerial decision making, however, the capital cost function must be made explicit. That is, the relationship between the capital cost and each of the capital cost-determining variables must be specified. This is necessary yet very difficult, because the institutions bear a relationship to interest and risks.

We selected capital structure as one of these problems. In the equilibrium theory of MM, the coordination of the market is the only price mechanism. As against MM, we proposed the quantity-adjusting mechanism, that the main bank and the management of the firm play important functions. Probably in practice, there would be a moderate position. In US, this is the reason why corporate governance and agency theory are brought into question. The price mechanism for the financial or capital market is not also almighty.

- (1) Modigliani, F. & M.H.Miller, "The Cost of Corporation Finance and the Theory of Investment," *American Economic Review*, 48 June, 1958.
- (2) Pointon, John ed., *Issues in Business Taxation*, Avebury, 1994.
Jorgenson, Dale W. & Ralph Landau ed., *Tax Reform and the Cost of Capital*, The Brookings Institution Washington, D.C., 1993.
Stern, Jerrold J. ed., *Advances in Taxation* JAI Press Inc., 1993.
- (3) Modigliani, F. & M.H.Miller, "Corporation Income Taxes and the Cost of Capital ; A Correction," *American Economic Review*, 53 June, 1963.
- (4) Kamekawa, Masato, "Capital Market Failure and Capital Structure of Firms," *Review of Business Administrative Behavior*, Vol.7 No.1, 1992.
- (5) Wakasugi, Takaaki., "Optimal Capital Structure : Theory and Evidence (2), (3)," *The Journal of Economics*, January, April, 1987.
- (6) The Japan Development Bank ed., *Handbook of Industrial Financial Data 1993*, The Japan Economic Research Institute, 1993.

REFERENCES

- (1) Weston, J.Fred & Eugene F. Brigham, *Essentials of Managerial Finance*, Sixth Edition, Holt-Saunders, 1982.
- (2) Pappas, James L. & Mark Hirschey, *Fundamentals of Managerial Economics*, Second Edition, Holt-Saunders, 1985.
- (3) Sawyer, Malcolm C., *The Economics of Industries and Firms*, Second Edition, Croom Helm, 1985.
- (4) Furubotn, Eirik G. & Rudolf Richter ed., *The New Institutional Economics*, J.C.B. Mohr (Paul Siebeck) Tübingen, 1991.
- (5) Horne, James C., *Fundamentals of Financial Management*, Seventh Edition, Prentice Hall, 1989.
- (6) Brealey, Richard & Stewart Myers, *Principles of Corporate Finance*, Second Edition, McGraw-Hill, 1984.
- (7) Dimsdale, Nicholas & Martha Prevezer ed., *Capital Markets and Corporate Governance*, Clarendon Press Oxford, 1994.
- (8) Parker, David & Richard Stead, *Profit and Enterprise*, Harvester Wheatsheaf, 1991.
- (9) Kirzner, Israel M., *Perception, Opportunity, and profit - Studies in the Theory of Entrepreneurship*, The University of Chicago Press, 1979.
- (10) Kamekawa, Masato, *The Corporate Capital and the Profit - Financial Approach of the Theory of the Firm*, Second Edition, 1993.
- (11) Skousen, Mark, *Economics on Trial : Lies, Myths, and Realities*, Dow Jones-Irwin, Inc., 1991.