An Analytical Framework of Japanese Corporate Finance for the High Growth Period and the Bubble Period: A Macro-and Micro Approach with Eichnerian-Kaleckian Modelling*

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Abstract

Despite the metamorphosing of corporate finance, the high growth period and the bubble period share basically the same financial structure of intermediary system sustained by easy monetary policy and maximization of deposit. This system is one of the major factors that laid seeds for and fuelled the rapidly expanding speculation called 'bubble' in the late 1980s, while it contributed to creating the successful high growth economy in 1955-73 periods. Though superficially the main factor of the bubble is considered to be in increasing bank loan towards non-manufacturing industries, especially non-manufacturing small business enterprises, this paper maintains that in order to understand this point it is necessary to investigate corporate finance, especially the finance for big corporation finance in the manufacturing industry during both periods. Risk functions as the core of the Eichnerian-Kaleckian models are to play an important role in this analysis.

Ⅰ. Introduction

Juxtaposition of the high growth period and bubble period may appear peculiar. However, the both periods share the similar characteristics in financial intermediary system and corporate finance for expenditure. While the financial intermediaries under easy monetary policy contributed to the high economic growth in 1955-73 [1)], it has become one of the main causes of the bubble in the late 80s. Therefore, section Ⅱ deals with macroscopic framework which includes financial intermediaries and corporate finance for expenditure. It supplements the microscopic discussions of sections Ⅲ and Ⅳ, and highlights the significance of endogenous money supply in that the quantity of money supplied accommodates itself to the quantity of money demanded.

Both economies were created, in terms of form, by similar factors—deficit expenditures by economic units—but spending patterns were quite different. In the high growth period, deficit expenditure was poured mainly into purchasing new plant and equipment, whereas in the bubble it was spent largely

on assets. Therefore, in the high growth period it brought about a boosting production, while in the bubble economy it drew raising asset prices. Both economies are shown as prosperity (whether it is superficial or not), but their natures are quite different.

Section Ⅲ and Ⅳ analyse the behaviour of economic units in detail, especially focusing on the finance behaviour of big corporations. This paper puts greater emphasis on sections Ⅲ and Ⅳ, because constructing the Eichnerian-Kaleckian models is also another important aim of the paper.

Section Ⅲ starts with discussing the high growth period economy. Section Ⅳ elucidates how the financing behaviour of the big corporation contributed to the forming and collapsing process of the bubble economy through an interaction between real and monetary investment. In doing this, Minsky's idea of financial fragility is incorporated into the Eichnerian-Kaleckian framework.

In the high growth period, it would be better to describe the economic features by focusing on changes of flows, such as incremental real investment, while during the bubble economy it is considered better to focus on changes of stock variables, such as basic expected valuations of share price movements, levels of investment, and price changes of financial assets. These differences reflect the characteristics of both economies, that is, flow economy vs. stock economy. In addition, the risk involved in investment plays a key role in the bubble economy with entrepreneurs' subjective anticipation of the future.

Even though both economies experienced prosperity, economic growth rates were quite different. From viewpoint of pricing theories, substitution effects whose neglect brings us no major problems in the high growth period, due to overwhelmingly larger income effects, are more important in the bubble economy, which will be reflected in the models below.

Besides corporate finance, analyses of pricing behaviours in both economies are also important. This is because the models below are dependent on the linkage between internal funds for investment and pricing by big enterprises, incorporating the principle of Kaleckian increasing risk into them.[2] Thus, the models in sections Ⅲ and Ⅳ could be called the Eichnerian-Kaleckian models. With respect to the pricing models these models are, beyond the risk involved in investment, more general than Eichner's[3] (Kanao 2001, pp.126-7 and pp.154-5). However, this paper will not deal with this issue. So the connection between pricing and corporate finance is implicit in the models.[4] Another thing for the models to be noted is that the interest rate of bank loan in the high growth period and the marginal expected financial return net of risk (in Ⅳ.1) in the bubble economy play a similar role to the permanent interest rate in Eichner's model.[5]

Section Ⅴ provides a summary and makes some implications involved in the models clearer.

Ⅱ. Macroscopic Framework for Finance and Investment

1. Prices, Asset Inflation and Financial System

Suppose that initially an economy is stationary and then any economic units carry out deficit expenditures. Deficit expenditures beyond income constraints as a whole make possible by credit creation of banking system. In other words, deficit expenditures to prior savings are inevitable to be financed, in the form of bank loan, through credit creation. If expanding expenditures continue, it brings about three possible cases; 1.production growth, 2.persisting inflation without production

increases and 3.persisting asset inflation without rising prices (For further explanation, see Wray, 1991). Case 1 represents the high growth period, though it really accompanied by the stable wholesale price and the mildly rising consumer price. Case 3 is typical of the bubble economy.

During the high growth period, division of price movements in flow goods reflects differentials in increasing rates of productivity between consumption industries and industries composing the wholesale price index. However, this rising consumer price was sustained by consumers' increasing demands due to boosting incomes which ever increasing investment creates through multiplier process. Without consumers' increasing demands, rising consumer price would have caused many bankrupts in consumption industries.

It is well known that easy monetary policy was implemented during both periods. As Ikeo (2006) pointed out, this policy regime triggers fierce competition for gathering bank deposits, because it makes banks capture excess-profits. In an addition to large volume of bank deposits gathered, ever increasing credit (through credit creation) was granted to corporations, sustained by the Bank of Japan's policies.

Next, let us focus on the bubble economy. Why could we confirm that increasing loan was spent on assets and triggered expanding asset inflation with stable prices of flow goods? Sadahiro (2006) states that while the growth rate of bank loans of finance-and-insurance, real estate, and construction industries in 1986 and 87 is above 20% at annual rate, that of the other industries is 5%-7%, and stable or rather decreasing compared to that in the early 80s. He insists that the division between prices of assets and stable prices of flow goods is explained by these differences of the bank loan growth rates. This is surely plausible explanation, because it can explain not only stable prices of flow goods but also production growth, as shown in loan growth rate of the other industries, 5%-8%. But it does not give us sufficient explanation of asset inflation. As it does not take account of purchasing shares by financial institutions, it cannot fully elucidate rapidly rising share prices. Financial institutions stimulated speculation not only by loans, but also by purchase of shares. In addition to this, it is necessary to analyse interactions between corporate finance and financial-real investments. This is to be dealt with in detail in section Ⅳ.

Since the first 'oil shock' in 1973, excess savings over investment and distortions of financial system have become increasingly conspicuous. Big corporations, especially in manufacturing industries, came to tap credit markets directly or equity finance more and more. Therefore, banks turned their loans to real estate industries, their connected industries, and medium-and-small corporations in the late 80s.

Then, why could the Japanese have maintained so long such an inappropriate, financial system for the economy in the late 70s and 80s, although it is appropriate for the high growth economy? It is because the Japanese have successfully overcome the first and second oil crisis by making manufacturing industries overwhelmingly competitive. That is, 'the success of the manufacturing sector, particularly in exporting to the US and Europe, enabled the Japanese not only subsidize their agriculture sector by increasing amounts, but to continue to protect jobs in unproductive service and financial sectors' (Freedman, 2006, p.43). In addition to this, euphoria due to confusing asset inflation with rising expectation of economic growth has hidden inconsistencies of financial system in the late 80s (See *ibid*., p.50.).

A part from misiguided financial policies by the goverment and the Bank of Japan, the bubble was

caused by combination of financial system, institutional reform of finance, and speculation behaviours of economic units. However, this paper does not deal with institutional reform of finance in detail. Section Ⅳ is to deal with problems of purchasing shares by financial institutions, and detailed explanation for speculation and investment behaviours of economic units.

2．Macroscopic View of Finance and Investment

As additional internal funds are accrued by expanding gross profits, raising prices and/or adjusting costs in sections Ⅲ and Ⅳ, it appears as though investment funds were entirely exogenously obtained. This proves to be true from an individual entrepreneur's viewpoint. However, investment basically funds itself as a whole, and therefore the models in sections Ⅲ and Ⅳ do not contradict endogenous money supply from macroscopic viewpoint. It could be called a kind of fallacy of composition like in Kaleckian profits determined by the capitalist expenditures, which is true for the capitalist as a whole, but false for each individual capitalist. The statement below is concerned with the way investment funds itself.

Suppose that investment rises by ΔI. For simplicity, let us make an assumption that the increases of imports and taxes are neglected. Enterprises in the investment-goods industries finance working capital by bank loans. At the same time, enterprises in the consumption-goods industries will borrow bank loans as working capital anticipating consumption increase $c\Delta I/(1-c)$,[6] where c is marginal propensity to consume. These deficit expenditures in the form of bank loans should be financed by credit creation as mentioned above. These short-term loans $\Delta I/(1-c)$ make up business deposits of the enterprises which received the credit necessary for meeting production of investment orders and consumption. The enterprises must pay not only incomes, as wages and profits, but also material costs by these business deposits. Thus, the business deposits circulate from business deposits to business deposits, creating income deposits. These processes create the income deposits in total equal to the investment increase plus consumption increase. Therefore, short-term loans of consumption sector can be repaid to banks by proceeds from investment sector, $c\Delta I$ and sales to consumption sector, $c^2\Delta I/(1-c)$.

However, what makes it possible that the corporations obtain the funds to purchase newly produced investment goods and return short-term bank loans? Increased savings make it possible to provide long-term funds for repaying short-term bank loans and purchasing increased investment goods. This is described below more in detail.

When multiplier process works out itself, planned saving deposit increase in total is equal to planned investment increase. Now, the corporation as a whole obtains a part of funds required for additional investment by long-term loans and issuing bonds and shares, while the rest of funds are financed by internally generated additional funds, that is, corporations' increased savings. Household savings are just enough to purchase bonds and shares, and to make banks provide long-term loans for corporations by saving deposits. Thus, saving increase generated by incremental investment sources required investment increase by funding long-term from short-term.

To date, short-term interest payments to the banks are neglected. Yet this does not basically alter the above argument. Suppose that short-term interest payments are comprised in incomes and are spent on consumption goods and investment goods. The corporations of consumption sector and

investment sector could pay short-term interests by sales of their products. Thus the corporations which borrowed the discounted amount loans from the banks would repay the amount including interest payments to the banks.

It should be added that this multiplier process is only a pedagogical device as Wray (1991) points out. As investment and saving are always equal, exactly investment funs itself instantaneously. For example, suppose an additional investment, ΔI is produced by reducing inventory, $(-1/2)\Delta I$, and wages and profits, $(1/2)\Delta I$ are paid. Next, suppose wages and profits are spent on consumption goods by $(1/2)c\Delta I$ and the consumption-goods industries produce in order to meet this demand by reducing inventory, $(-1/4)c\Delta I$. At the same time, the consumption-goods industries must pay wages and profits, $(1/4)c\Delta I$. In this case, the total of investment is $\Delta I-(1/2)\Delta I-(1/4)c\Delta I$ and the total of saving is $(1/2)\Delta I-(1/2)c\Delta I+(1/4)c\Delta I$. Therefore, even in this stage investment and saving are equal.

Then, what happens if a part of increased household savings are directed to hoarding of idle cash balance? Bond prices fall, interest rates rise, and initial investment project is obliged to shrink. If sufficient, additional credit (money) to cancel out idle cash balance is supplied, in the form of long-term loan and/or purchasing bonds and shares, by banking system, investment project will be executed as planned initially. [7] Therefore, the condition of a prior investments increase to savings increase is the willingness of banks to accept a deteriorating liquidity position or to grant credit, which enables corporations to finance short-term funds and to fund smoothly from short term liability to long term liability without liquidity constraints.

This condition was fulfilled during the high growth period and the bubble economy in Japan, that is, by the Bank of Japan's over-loans and by asset price hikes through the easy monetary policy respectively. However, prosperity is destined to make provision for the bud of depression within itself as is often stated. In this respect, the importance of financial provision should be pointed out. Financial provision has been accumulated even during the bubble.[8] As Keynes said, the increase of financial provision means that 'we are aggravating the difficulty of securing equilibrium tomorrow' (1973, p.105).

Table 1 Composition Ratios of Finance and Use of Financing Funds in All Industries

(%)

fiscal years average	finance					
	borrowing	bonds	shares etc.	depreciation	retained earnings	total
1970-73	52.7	2.1	4.7	25.4	15.0	100.0
1974-78	38.3	3.9	10.5	31.1	16.2	100.0
1979-85	37.5	4.8	8.7	33.4	15.5	100.0
1986-90	43.1	6.4	9.4	27.7	13.4	100.0
1991-92	31.9	4.0	6.2	45.7	11.7	100.0

fiscal years average	use of financing funds				
	investment of plant and equipment	investment and others	working capital	total	surplus or deficit
1970-73	52.7	16.3	6.3	75.3	24.7
1974-78	54.6	13.7	13.3	81.6	18.4
1979-85	58.9	15.4	10.5	84.9	15.1
1986-90	51.0	18.5	12.3	81.9	18.1
1991-92	83.2	26.6	2.3	112.1	-12.1

Source: Japan Development Bank (1994 p.33)

However, the problems of financial provision potentially existed but were only hidden in the high growth period and the bubble economy. After both periods, over-investments manifested themselves, especially, conspicuously after the bubble economy. From macroscopic corporate finance, Table 1 confirms this fact. We can easily see that the finance ratio of depreciation and internal earnings in total is overwhelmingly big and considerably covers the capital investment fund, especially after the bubble.

Finally, it should be added that the above macro-framework for investment-saving is roughly consistent with both periods, although it is incompatible with the framework in the early 80s. Because the flow of funds in both periods shows that the largest deficit sector is corporate business sector on an average while the largest surplus sector is personal sector. However, exactly the current account surplus cannot be neglected even in 1988-90, although it is partially cancelled out by the government surplus (See the bank of Japan, 1991, p.3). This means excess savings exits even in the bubble periods. Therefore, the above model should be partly modified, taking account of the current account surplus minus government surplus or deficit.

Ⅲ. Corporate Finance in the High Growth Period

The corporate finance in the high growth period is less complex than that in the bubble economy. An easy monetary policy, that is, an artificial low interest rate policy for promoting bank loans to corporations was also important in this period, as seen in the above. Deficit spending by corporations served for increasing flow variables, such as GNI (Gross National Income).

As some flow variables are represented by changes of stock variables, the model of section Ⅳ is described by the flow variables and changes of stock variables. However, the features in this period will be made clearer by the special model. Analysis of financing funds in this period constructs the foundations for considerations below. Therefore, discussion will be developed in detail.

1. Internal Finance for Additional Investment Funds

According to Eichner (1976), the incremental surplus value has 'two sources: (1) the gains from technological progress, as manifest by secular decline in average variable and fixed costs, . . .(2) the growth of the corporation itself, as manifest by the secular increase in engineer rated [production] capacity' (p. 181, [ ] added). The high growth period of the Japanese economy from the late 1950s to the early 1970s was characterised by a period of exceedingly buoyant investments in plant and equipment, primarily promoted around the heavy and chemical industries. This period also involved the introduction of new technology from abroad (especially America), even though it followed the domestic reconstruction process of more efficient production or minor innovation. Under such circumstances entrepreneurs of oligopolistic corporations could have somewhat certain expectations about secular incremental value from the two sources in the future. However, it is evident that oligopolistic corporations[9] have the power to restrict, to a certain extent, excessive price competitions whereby surplus can be more or less assured. It should also be noted that government protection of industries facilitated larger surplus by restricting excessive foreign competitors.

In that period, as far as price-cost relation is concerned, these processes of rising surplus value are represented better by cost reduction under relatively constant prices (reflecting stable wholesale prices). Such a price-cost relation would reflect the fact that the corporations attach greater importance to competitions for increasing sales, and prefer their increasing incomes from fixed cost reductions brought about by higher operation ratios to their incomes obtained by price increases. In fact, as the investment in plant and equipment extends, there always exists a fear of overcapacity. For the purpose of cancelling such overcapacity, the export drive is often carried out. On the other hand counter cyclical monetary and fiscal policies were also potentially useful in coping with the fear of overcapacity. Because they give psychologically safety feelings to the corporations, even if in reality they were not often carried out in that period.

High economic growth accelerated the growth of these types of manufacturing enterprises in two ways; one resulted from general expansion, and the other, from a relative shrinkage in primary industries, especially in agriculture. In other words high economic growth will create a bigger income effect for manufacturing industry. When each industry grows, the demand curve for each corporation will shift outwards. This demand expansion, shown as big income effect, *pari passu* with production capacity and the cost reduction due to technological progress are highly likely to lead to a disproportionate increase of the incremental surplus in each corporation from its own long-term perspectives.

The income distribution process can be delineated as the process of how the stakeholders of the corporations negotiate with the corporations for their shares of incremental surplus, like in Eichner (1976 chap. 5). Let us begin with assuming that the debtors' income share has been determined by the corporations' debt structures and the dividend share also passively, by dividend policy. Then we can focus on the negotiation between the labour and the corporation over obtaining residual incremental income, as seen below.

The scheduled part of labour remuneration (including no bonuses) may be considered as determined by (pay) relativities to which Wood (1978) attached great importance as a factor causing wage inflationary spiral; that is, the labour remuneration determined by the result of wage bargaining in the key industries, such as the steel industry, plays the crucial role in setting the wage norm, 'national incremental wage pattern' in Eichner's usage (1976 p.159). Corporations and labours in most other industries are most likely to reach their agreements on their wage incremental negotiations by adopting it as their base reference. Theorising the Japanese wage incremental process in this way can be achieved by adopting Wood's theoretical framework for pay relativity (1978 chap. 5), with its minor modifications. However, it is not discussed further, because it has been done elsewhere (Kanao 1985 chap.14 and 2001, pp.178-96).

Thus, it is assumed that the scheduled part of labour remuneration has been determined. A part of the special pay also will be determined similarly. But the rest of it will have a greater flexibility and variance among corporations or industries than the scheduled part, reflecting the earnings of the corporations. In fact, the Economic Planning Agency estimates the percentage contribution of each determinant, for the fiscal years 1966-1980, to bonuses which make up a larger part of the special pay. Those estimates tell that about 50% is contributed by the percentage increase of the spring wage and the rest 50%, by the current profit rate (See Economic Planning Agency, 1982, p.246).

Now, focusing on the latter nature of special pay such as bonuses, corporations are supposed to be in a position to use it as their business strategy. In other words, the author can find himself in a position to build 'a theoretical hypothesis,' concerning one of additional, internal funds.

Let us begin the discussion by assuming the scheduled part of remuneration and the half of the special pay that depend on the spring wage have been determined. Also suppose the corporations-rated all other costs except the other half of the special wages have been determined. Firstly, the corporations will change their prices to equalise the marginal finance costs of internal funds, that is, their 'implicit' interest rates with marginal costs paid for other alternative funds, as in Eichner's megacorp (1976 pp.86-103). However, unlike Eichner's they would rather prefer not decreasing proportionally their prices in cost reductions to increasing their prices. Increases in prices, of course, will arise whenever costs rise. Secondly, in addition to the above, the corporations will also choose cost changes (such as lowering the degree of increasing rate of bonuses) as their strategy to obtain an additional internal fund. To sum up, Japanese employees have cooperated, to some extent, towards achievements of the objectives of corporations, including some short-term sacrifices for them, and hence corporations will have an expectation to be able to obtain some cooperation from them in planning additional internal finance for investment projects. Japanese labour forces have been conscious of part of bonuses being tied up with the performance of their corporations. They can expect in return more bonuses and greater job security only in a growing corporation. Thus, we can consider that the labour force employed in the Japanese corporations is not merely one of their stakeholders, but also one having a somewhat strong identification with the corporations. The wage system ('seniority order wage system') and the employment practice ('lifetime employment system') widely known as part of Japanese management characteristics also have helped foster such sympathetic feelings.

Bearing in mind the relationship between labour and management as described above, it would be possible to consider that employees behave on the basis of long-term rather than short-term benefits. And furthermore, the corporation which has a past history of having rewarded them with long-term benefits for short-term sacrifices could more easily persuade them to accept their cooperation in its planning strategies, even if it might involve short-term losses. In that case, the greater their sacrifices, the greater the later reward will be. Now, the internal, additional, finance planning due to cost adjustment will be summarised below.

Internal additional finance due to cost adjustment　Let ΔV_t be prospective, additional internal fund obtained in time t by raising special wages such as bonuses at slower rate than otherwise. The total present value of ΔV_t is

$$V = \Sigma_{t=1}^{k} \Delta V_t / (1+i)^t$$

where k is the number of time periods for restricting the growth rate of special wages. Let us represent ΔL as prospective extra labour cost. Then in order to compare bond and borrowing costs, the discounted total value after one period of prospective extra labour cost including necessary compensation for labour represented by L is obtained as follows, where s is the time perspective entrepreneurs expect to incur the cost.

$$L = \Sigma_{t=j}^{s} \Delta L_t /(1+i)^{t-1} \qquad (s > j)$$

The assumption of $j \geq 2$ would be rational, because the additional cost incurred are likely to arise with some time-lags in obtaining the additional internal fund. Therefore, implicit interest rate due to cost adjustment equivalent of interest rate or, more precisely, marginal financing cost is $(L/V)-1$, where assumptions are $L_v > 0, L_{vv} > 0$.

2. Finance of Additional Funds by a New Issue of Shares

In the high growth period, the share market was immature and the finance costs by a new issue of shares were considerably higher, including tax. Therefore, only a minor part of additional funds were financed by a new issue of shares. It should be noted that major new shares were issued at par and were allotted to the existing shareholders at that time. Funds gained in this way are risk-bearing capital and therefore can be considered a contributing factor to building up the strong management foundation for the corporation. Managers have often longer-term goals than shareholders. Then, the ultimate objective of the corporation is the capture of the power[10] obtained by pursuing the growth maximisation from longer-term standpoint, while individual minor shareholders' objectives are regarded as the maximisation of the sum of dividend and capital gain in shorter-term. On the other hand, major corporate shareholders of a given corporation behave in accordance with their own objectives. So the corporation should be modelled as a separate organisation from the shareholders themselves which pursues its own goals. Therefore, a dividend is an outflow cost towards the outside of the corporation. However, the marginal finance cost of the new share issued, comparable with the marginal borrowing cost, is calculated, not only on the current level of the dividends 'but also on the rate at which those dividends can be expected to increase over time'(Eichner 1976, p.86). Such a cost as that calculated above per period to the amount issued is a first approximation of the marginal financing cost comparable to the marginal borrowing cost.

However, in cost calculation further allowances should be made, because the additional funds by the new share have their own merits as risk bearing-capital in terms of management strategies. And demerits from long-term perspectives of the corporation management, if any, should be calculated. Therefore, the net merits as merits minus demerits should be deducted from the above marginal finance cost.

For all reasons stated so far share markets were used only as a limited source of funding. It is reasonable to suppose that the marginal cost is increasing gradually with the amount issued. And also it could be supposed for simplicity that this increase of the marginal cost is negligible.

3. The Borrowing Component

Since the corporation has a rather narrower discretionary scope for borrowing than for the other financing means such as an internal finance, etc., and the terms and amounts of additional borrowing were determined by negotiation between the bank and the corporation in this period, we can deal with that transaction behaviour as a non-zero-sum two person cooperative game.[11]

Let us assume for simplicity that the corporation proposes to the bank a certain amount of long-

term borrowing. This proposal can be regarded as the corporation's strategy. Then, suppose that the bank imposes, on loan, some conditions such as a collateral ratio to loan and an amount of compensatory deposit. A set of these conditions can be regarded as the bank's strategy. If each corporation and bank has merely two pure strategies for simplicity, we will be able to obtain the pay-off matrix as seen in Table 2.

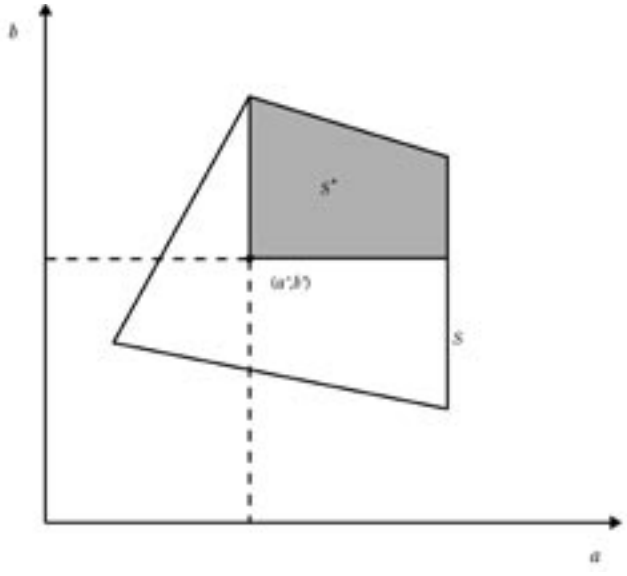
Naturally, the number of their pure strategies could be increased without altering the basic conclusion. Now, a_{ij} (i=1,2; j=1,2) in Table 2 represents the expected profit of the corporation, b_{ij}, the expected profit of the bank, and subscripts i and j represent the corporation's strategy and the bank's one, respectively. The expected profit of the corporation could be obtained by substituting the term and the amount of additional borrowing (a pair of strategies (i, j)) into the equation system which will be made clear later. The expected profit of the bank can similarly be obtained if there exists a suitable profit function of the bank.

Let P_{ij} be the probability which the corporation and the bank give each pair of strategies (i,j) collaboratively, where $\Sigma_{j=1}^{2}\Sigma_{i=1}^{2}P_{ij}=1$. A set of mutually all available, expected profits, S is outlined in Figure 1. That is, $S=(\Sigma_{j=1}^{2}\Sigma_{i=1}^{2}a_{ij}P_{ij},\Sigma_{j=1}^{2}\Sigma_{i=1}^{2}b_{ij}P_{ij})$. This feasible set is known as convexity and compactness. However, since the pair of maximin values (a^*, b^*) is the pair of values which one can obtain independently of the other, each expected profit obtained by collaboration has to be not less than it. Therefore, the shadowed area S^* as the subset of S in Figure 1 is only the subject to be taken into account. And now that S^* also is a compact convex set, it turns out that a continuous, real

Table 2　Pay-off Matrix

Firm \ Bank	1	2
1	(a_{11}, b_{11})	(a_{12}, b_{12})
2	(a_{21}, b_{21})	(a_{22}, b_{22})

Figure 1　A Set of Mutually Expected Profits



valued function defined on this set inevitably assumes a maximum value. Nash's solution results in maximising the objective function $f(a,b) = (a-a^*)(b-b^*)$ for this set (Nash, 1950). Thus, with a suitable objective function given, such as strictly quasiconcave function like Nash's, the terms and amounts of borrowing are determined as a unique solution of the game.

4. A Model of the High Growth Period

Bearing the statement above in mind, the following equations can be obtained.

(1) $\Delta I = x_1 + x_2^* + x_3$

(2) $R = R(x_1)$

(3) $i_w = i_w(x_3)$

(4) $R = i_w$

(5) $R = \mu_m - \rho$

(6) $\rho = g[x_2^*/(x_1 + x_2^* + x_3),\ \sigma_m]$

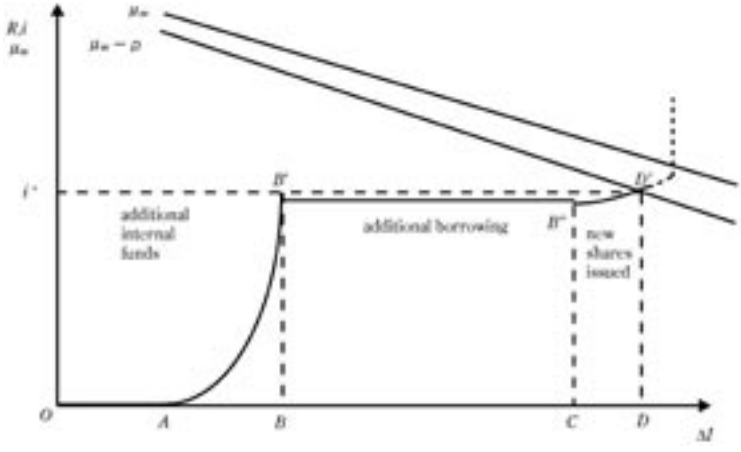
(7) $\sigma_m = \sigma_m(\mu_m)$

(8) $\mu_m = \mu_m(\Delta I)$

Where; ΔI is the amount of additional investment; x_1 is the amount of additional internal funds; x_2^* is the amount of additional borrowing predetermined; x_3 is the amount of additional funds by shares newly issued; R is the marginal cost of additional internal funds; i^* is the effective interest rate of additional borrowing predetermined;ρ is the marginal risk premium for the corporation;μ_m is the expected value of marginal efficiency of investment; and σ_m is the coefficient of variation of marginal efficiency of investment as measure of uncertainty.

Before stating features of the model, it should be explained that there is a gap between $i^*$and the other marginal financing costs. In the negotiation between the bank and the corporation, the corporation attempts to borrow as much as possible in order to make the gap zero as closely as possible, comparing i^* with other financing costs as a rule of thumb. However, during the high growth

Figure 2 Corporate Finance in the High Growth Period



period, the positive gap was normal. This meaning will be soon made clear.

First, x_1 here involves the amount of additional internal funds obtained by both price altering and cost adjustments. And in addition, here, account is taken of the fact that an additional internal fund arises without incurring any real cost, for example, due to increasing production capacity *pari passu* with increasing demand. This is illustrated in Figure 2, $0A$. Therefore $0AB'$ in the Figure, that is, the marginal cost curve of internal finance, R is composed of the horizontal aggregation of each an additional internal fund. And concerning first and second derivaties of R, suppose $R_1 > 0$, $R_{11} > 0$. Second, it has shown that the amount of additional borrowing, x_2 and its conditions, i were predetermined by negotiation between the corporation and the bank. Therefore, let them be x_2^* and i^*. Third, the point to note is the introduction of uncertainty and increasing risk into equation (6). It represents that ρ is the increasing function of the amount of additional borrowing to the additional investment funds and also the increasing function of σ_m.

In the above system, assumptions are that σ_m in equation (7) is the decreasing function of μ_m, and that μ_m in equation (8) is the decreasing function of ΔI. It should be noted here that the position of μ_m depends on the corporation's expectations of industry growth contained only implicitly in the function μ_m and marginal efficiency of investment determines the slope of μ_m curve as in Eichner (1976 chap.3).

The above equation system can have a unique solution in principle as it has 8 unknowns in line with 8 independent equations. The solution reflecting the situation of the high growth period is depicted in Figure 2. $0AB'$ is the marginal finance cost of additional internal funds as described above, $B'B''$ that of additional borrowing, and $C'D'$ the marginal finance cost of new shares issued. Figure 2 illustrates that a larger part of additional investment funds is additional borrowing, BC, and that the internally generated additional funds, $0B$ are the second largest and the financing funds of the new shares issued, CD is marginal.[12] it should be noted that each marginal finance cost curve in the Figure has its own origin in 0, B, and C, respectively. Because it clarifies the relative amount and marginal finance cost curve of each financing source, although the graphic expression is unorthodox. However, the origin of μ_m and $\mu_m - \rho$ curves are 0.

The above system will reverse of the selection order of financing sources, should more stable and longer-term funds be more favourable for the corporation's interests. In such a situation additional internal funds should be considered first before a new issue of shares, or borrowing as a last resort. It should be noted, however, that in this system borrowing has the first priority, and then additional internal funds and financing through new share issues come into consideration. On the other hand, the corporation can properly estimate, to a certain degree, the part of internally generated funds x_1 obtained without incurring costs. Therefore, the internally generated additional funds considered by corporations are only the residual part of x_1. Besides, x_3 also is a minor part of financing funds, as stated above. Thus, in light of the fact that a larger part of investment fund consisted of the borrowing fund, and that the corporation could not set up its investment project without planning the borrowing, it is concluded that the above system where the borrowing has the first priority can be regarded as reasonable. However, it should be added that the amount of internally generated funds was small relatively to the amount of investment, yet not as small in absolute terms (See Suzuki, 1974, chap.2).

Furthermore, it should be noted that excess demand of borrowing fund was norm and the effect of

the artificial low interest rate somewhat spilled over from the banks into the corporations (See Ikeo, 2000, p.66). This justifies that i^* is slightly lower than marginal costs of internal additional funds, B' and of funds by new shares issued D', as shown in Figure 2.[13)]

Three important points can be derived from the above analysis. The first and the second are concerned with interpretations of the factors that brought about high growth in terms of the corporation finance, and the third discusses the stability of capitalist economies.

Firstly, the easy monetary policy (the artificial low interest rate policy) which encouraged loans to corporations from banks, and the protection of banking and heavy industry which decreased lenders' risk, have often been discussed to date. However, it is very rare that these policies have been discussed in terms of pushing outwards borrowers' increasing risk together with the close relationships of corporations with banks as shown above. The analysis emphasises this point with buoyant investment activities as the fundamental condition. Without mitigating borrowers' increasing risk, the corporation could not carry out such a large amount of borrowing. On the one hand, the low interest rate policy makes the marginal financing cost, i^* lower and the corporation benefits from some part of the rents the bank created (See also *ibid.*). On the other hand, the protected industry policy makes the marginal risk premium curve (which can be depicted by (6)) flat and shift downwards by pushing outwards increasing risk. These two points contributed to high growth.

Secondly, the oligopolistic corporations' power to restrict excessive price competition combined with the protected industry policies made possible to capture absolutely large internal funds, though relatively small to the amount of investment.[14)] Because the protected industry policies made real costs lower that the corporations incur to capture internal funds through not decreasing prices in relation to costs (For meaning of real costs, see note 3). In addition, the corporations could tap another internal financing source by cost adjustments as stated above.

Thirdly, capitalist economies, especially the Japanese economy appears stable in the high growth period. However, such a phenomenon is not sustainable, and instability is only hidden by buoyant investment activities. They depend on corporations' subjective expectations such as expected values of growth of industries and prospective yields of investments and risks, and have a self-fulfilling nature. In the periods such as the high growth economy and the bubble economy, propensity to consume as stabilising factor becomes smaller, while investment ratio as unstable factor becomes larger. Both the marginal capacity function and the marginal risk premium function shown in Ⅳ.1 are dependent on the above corporations' subjective expectations and self-fulfilling nature, and are intrinsically unstable. In addition, high investment ratio potentially reinforces economic instability. Once the role of external markets (excess export and government deficit) begins to increase, instability of the economy surfaces (For external markets, see Kalecki, 1954, p.52). Such an economy cannot be sustained long without friction. Friction will give negative influences to ρ curves in Ⅳ.1. These negative influences will further most likely be reinforced by the self-augmentative nature of the curves. Section Ⅳ provides this self-augment in the extreme case.

Ⅳ. Corporate Finance during the Formation and Collapse of the Bubble Economy

In the Japanese low or medium growth period from 1974 to 1989, the ratio of the asset value such as land and shares to GDP has continuously increased and especially rapidly increased during the bubble. Therefore, variations of asset values tend to influence the Japanese real economy, and emerge remarkably during the bubble.

Generally speaking, the bubble was caused by misguided policies of expansionary domestic demand combined with financial innovation.[15] These exogenous factors are important, but the bubble would not have been accelerated without the speculative augmentation mechanism as endogenous factors inherent in the Japanese economy. The speculation process in mid-1980s to early 90s, the so-called 'bubble' was driven as real-monetary interaction by speculative behaviour of each economic unit, creating fragility in each financial position and the economy as a whole.

The author mentioned in Abstract that in order to understand 'increasing bank loan towards non-manufacturing industries, especially non-manufacturing small-and medium enterprises, it is necessary to investigate the finance for big corporations'. Therefore, the analysis below elucidates how the metamorphosing of corporate finance, especially finance of big corporations was accelerated through the expanding and bursting babbles. And this section also clarifies how the financing behaviour of big corporations contributed to swells and collapses in the bubble.

1. A Model of Corporate Finance

Bearing this in mind and considering the economic features described in section 1, the following equation system can be obtained as representing financial behaviour of the big corporation.

(1) $I + \beta = X_1 + X_2 + X_3$
(2) $\rho = g[\omega (X_2/I), \sigma_m]$
(3) $\mu_m = \mu_m (I, R)$
(4) $\sigma_m = \sigma_m (\mu_m)$
(5) $i = \mu_m - \rho$
(6) $R = R (X_1)$
(7) $i = i (X_2)$
(8) $i_w = (X_3)$
(9) $i^* = i$
(10) $i^* = R$
(11) $i^* = i_w$

In the above, I, β and ω are amount of real investment, amount of financial investment, and basic valuation ratio of debt to assets, respectively. i^* represents the marginal expected return of financial investment net of risk, and is treated as a exogenous variable for simplicity, even though it is determined by the entrepreneurs' prospect for market conditions. However, more complex cases in which the financial investment is supposed as an endogenous variable have been dealt with Kanao (2001, pp.166-67). The treatment of this simplified assumption probably makes the discussion clearer. X_1 is

similar to x_1 in section Ⅲ, except that X_1 is internal funds for I and β as stock changes, but X_2 and X_3 are different, reflecting different economic situations. X_2 is the amount of borrowing from outside, but it includes not only bank loans but also finance by issuing bonds, which reflects drifting away from corporate reliance on bank funding to the development of bond markets. X_3 is the fund captured by new shares issued at market prices. Its finance cost for the corporation is by far lower in comparison with the par issues in the high growth period.

Even though others are similar as in section Ⅲ, some functions still require explanation. First, ω reflects entrepreneurs' expectations concerning valuations of stock variables like assets and debt, and tends to expose itself to speculative unstable changes. ω is also considered as an increasing function of X_2/I, that is, $d\omega/d(X_2/I)>0$. Then, ρ is an increasing function of ω, that is, $\partial\rho/\partial\omega>0$. Therefore, $\partial\rho/\partial(X_2/I)>0$. Second, μ^m is not only a decreasing function of I but also that of R. This means that the corporation is not likely to neglect deterioration of the expectation value of investment influenced by real cost reflected in R due to the substitution effect (For substitution effect, see note 2), because during the bubble the growth rate was lower than in the high growth period and the income effect was smaller. Lower growth will make buyers more sensitive. In addition, competitions with imports have become more severe. Therefore, the substitution effect could not be neglected. Third, the role of marginal risk premium ρ involved in investment is becoming more important, because in the high growth period, entrepreneurs could roughly have correct anticipation of the future growth rate from a long-term point of view, and consequently ρ was smaller (sustained also by the goverment protection policies of industries). In fact, as shown below, ρ plays a vital role in the speculative behaviour of big corporations. Finally, one of the most important things is that during the bubble, a large part of X_2 and X_3 were financed through markets differently from those in the high growth period. Therefore, agency problems involved in financing by X_2 and X_3 become potentially more important. However, euphoria due to rising asset prices (especially boosting land price) has hidden these problems. In the model structure, agency costs are implicit, because these costs are reflected only in shifts of functions (7) $i = i(X_2)$ and (8) $i_w = i_w(X_3)$.

Now is the time to investigate the workings of the model. By substituting i^* into (6) - (11), the determined values of X_1, X_2, X_3, and R can be obtained. Put in these values as X_1^0, X_2^0, X_3^0, and i^* respectively. Substituting X_2^0 and i^* into (2) and (3) together with (4) yields the following equation.

(2*a*) $\rho = g[\omega(X_2^0/I), \sigma_m\{\mu_m(I, i^*)\}]$

From equations (3), (5), (9), and (10), the equation is obtained as follows.

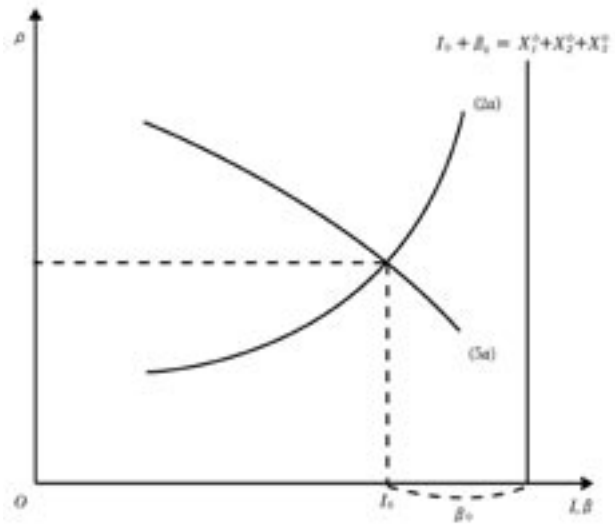
(5*a*) $\rho = \mu_m(I, i^*) - i^*$

(2*a*) and (5*a*) are called, respectively, the marginal risk premium function and the marginal risk capacity function. (2*a*) and (5*a*) together with (1) yield a determinte solution as shown in Figure 3.

Figure 3 shows that the amount of real investments is I_0 and that of financial investments is β_0. Two points should be noted before proceeding. First, X_2^0/I in the equation (2*a*) can be resolved into the following components in relation to financial investment. That is, $X_2^0/I = [X_2^0/(X_1+X_2+X_3)] \cdot [(X_1+X_2+X_3)/I] = \alpha(1+\beta/I)$, where α is $X_2^0/(X_1+X_2+X_3)$.

This represents the ratio of debt to real investment, which increases as the ratio of financial

Figure 3　Corporate Finance during the Bubble



investment to real investment rises. Therefore, *ceteris paribus*, the relative increase of β is to rise ρ through the rise of X_2/I. The second is concerned with the pervasive roles of gross profits. Gross profits are valuable sources providing the corporation with 'the cash flows that validate past financial commitments. [Gross] Profits are also the signals for investments and current financial commitments' (Minsky 1978, p.2; [ ] added). Therefore, it is assumed in the above model that the way they have validated past financial commitments gives influences to σ_m as measure of uncertainty and then σ_m influences ρ. Also gross profits as 'the signals for investments and current financial commitments' give influences to ω through X_2/I and then, to ρ.

2．Corporate Finance and Expanding Bubble Economy

From mid-80s to 89 the deficit expenditures in excess of incomes in the Japanese economy brought about enormously increasing prices of assets like land and shares. The 1994 *Economic Survey of Japan* (Japanese Economic Agency ed.) elucidated that the capital gains from price increases in shares and land, especially in 1986, 1987, and 1989, were more than the nominal GDP in the respective fiscal years (pp.196-97). At the same time the money supply was increasing at more than the proportionate rate to the nominal GDP, and it was shown that the asset values were rising *pari passu* with the debt values (1993 Economic Survey of Japan, chap.2).

Table 3 (calculated by *Statistics of Incorporated Enterprises*) shows that in composition ratios, the finances of manufacturing big corporations by shares, warranted bonds, convertible bonds (called equity financing and largely reflected in bonds, shares etc.), and internal funds (depreciation and retained earnings) increased conspicuously but on the contrary borrowings decreased to a negative value, in the 1986-90 fiscal year average.[16] Among these sources of funds, the finances by shares, warranted bonds, and convertible bonds involving issue of shares are conspicuous. Concerning finance situation of big corporations in all industries, borrowing ratio in fiscal years 86-90 is 26.6%, and in decreasing trend, though slightly higher than 23.6% in fiscal years 79-85 (See Japan Development

Table 3 Composition Ratios of Finance and Use of Financing Funds in Manufacturing Industry (big corporation: capital of 1 billion yen or more)

(%)

Fiscal years average	Finance					
	borrowing	bonds	shares etc.	depreciation	retained earnings	total
1970–73	42.2	2.5	4.4	35.1	15.7	100.0
1974–78	273.	4.0	13.3	36.8	18.5	100.0
1979–85	9.1	7.2	16.2	44.6	22.9	100.0
1986–90	−1.0	18.1	23.3	38.2	21.5	100.0
1991–92	14.4	2.2	8.4	59.8	15.2	100.0

fiscal years average	use of financing funds				
	investment of plant and equipment	investment and others	working capital	total	surplus or deficit
1970–73	67.9	12.8	−2.5	78.2	21.8
1974–78	58.0	7.9	17.8	83.8	16.2
1979–85	67.9	7.8	11.0	86.7	13.3
1986–90	60.7	15.6	4.0	80.4	19.6
1991–92	97.5	11.4	−0.2	108.8	−8.8

Source: Japan Development Bank (1994 p.35)

Table 4 Composition Ratios of Finance in All Industries (small-and medium corporation)

(%)

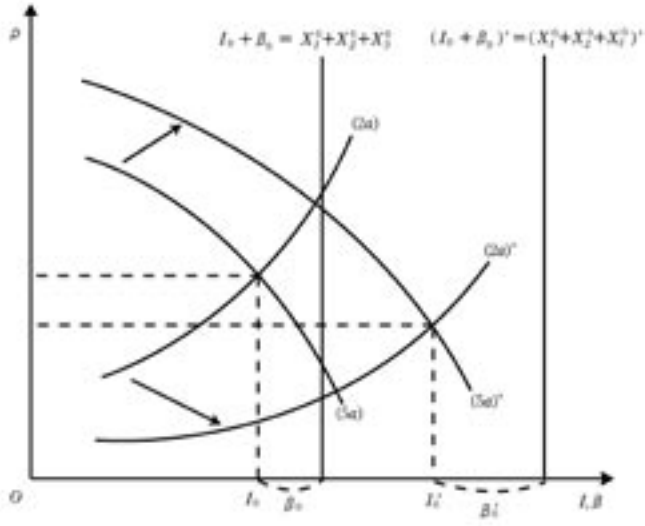
Fiscal years average	Finance					
	borrowing	bonds	shares etc.	depreciation	retained earnings	total
1970–73	46.8	0.0	1.8	24.7	26.7	100.0
1974–78	43.2	0.0	1.8	34.1	20.9	100.0
1979–85	47.7	0.0	0.6	29.9	21.7	100.0
1986–90	57.7	0.1	−1.9	21.1	23.0	100.0
1991–92	43.6	1.4	−1.8	36.6	20.2	100.0

Source: Japan Development Bank (1994 p.34)

Bank, 1994, p.33). However, finance situation in small-and medium sized corporation is quite different as seen in Table 4. Borrowing ratio is the largest in fiscal years 1986-90, and equity finance ratio is even negative.

Considering the above and that bank loans are directed towards real estate industry etc., the following sketch is obtained. The funds financed by deficit spending, sustained by the credit relaxation measures, raised the value of shares and land by being directed towards these assets. Banks also stimulated share prices by purchasing shares. This improves revenue from financial investment connected with share prices, such as specified money trusts and fund trusts, and also makes σ_m and ω lower, [17] which induces an outward shift of ρ in equation (2*a*). The costs of finance, especially those X_2 and X_3 are most likely lower. As for the former, the price rises of assets as shares and land make lenders' risk smaller and so real marginal cost of borrowing (X_2) lower. It is clear from the definition of the costs of x_3 in 3.2 that the latter costs should become lower due to share price rises. The shift of ρ gives incentives to increasing investment, which is to shift μ_m outward in equations (5*a*) and (2*a*)[18], and in turn this causes the shifts of (5*a*) and (2*a*) to (5*a*)' and (2*a*)' resulting in higher investment level from I_0 to I_0' in Figure 4. On the other hand, since $I_0 + \beta_0 = X_1^0 + X_2^0 + X_3^0$ is determined by

Figure 4　A Process of the Expanding Bubble



equations of (1), (6) - (11), (2*a*) and (5*a*), the lower finance costs enable X_1^0, X_2^0 and X_3^0 to increase, and then this finances the funds for the increasing real and financial investments. The equity financing by convertible bonds and warranted bonds as reflected in X_2^0 and X_3^0 increases rapidly, which is reflected in the shift from $X_1^0 + X_2^0 + X_3^0$ to$(X_1^0 + X_2^0 + X_3^0)'$ in Figure 4.

Sustained by the easy money policy, the corporations in real estate industry etc. and small-and-medium corporations continue to increase their deficit expenditures. The prices of assets rise more sharply, which increases collateral values and then enables them to borrow even more easily. On the other, the big corporations in manufacturing industry finance funds at lower costs, by selling shares, warranted bonds, and convertible bonds through markets and/or to financial institutions (such as banks, insurances, and trusts). Banks also contributed to raising returns of financial investments by providing the big corporations with *ouguchiteiki* or large-unit time deposit whose interest rate is higher than the equity finance cost. Therefore, the big corporations profited from investing temporary excess liquidities gained by equity finances in the time deposit. This means a part of excess profits of banks due to easy monetary policies spill over from the banks into the corporations. It is reasonable to judge that bank's behaviours except loans also contribute to increasing prices of shares (See Japan Development Bank, 1992, p.36). The funds acquired in this way are directed toward real investments and purchasing land. Thus, we can safely conclude that rising share prices and lower financing costs are sustained by banks. The asset price hikes play another role in promoting speculative behaviour. The asset price hikes make underlying risk ρ smaller, because the corporations could easily cover their business loss by profits on sale of their assets, even if they failed in capturing business profits. Thus the above speculative process continues to repeat itself with incremental real and financial investments.

A process of the expanding bubble economy can be described as stated above. It should be noted that the bubble created financial fragility within itself. The balance sheet of the bank was getting

vulnerable and fragile because of high leverage (or low equity capital)[19] . Therefore, even slight adverse changes of financial conditions would cause financial difficulties or bankruptcy, in both the business enterprise and the bank.

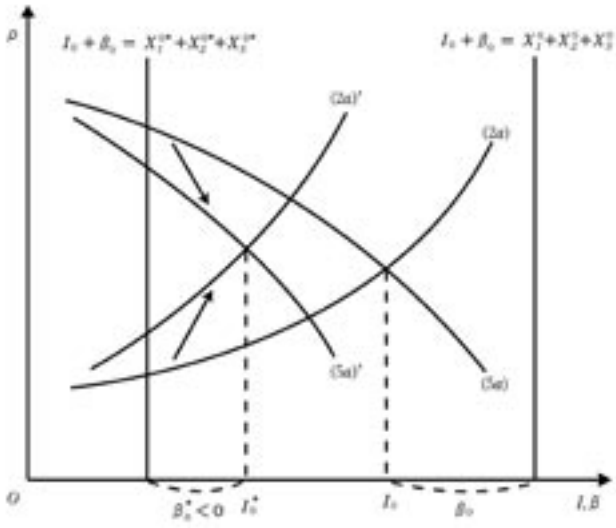
3. Corporate Finance and Collapse of the Bubble Economy

Minsky states: 'A regime of low short-and long-term interest rates will lead to a large margin between the two prices [demand price for capital assets and supply price of investment], which leads to a high ratio of external to internal finance' (Minsky 1986, p.195, [ ] added). This is a similar situation to the Japanese economy from 1986 to 1989, though the long-term interest rate was much higher than the short-term interest rate. Therefore, there existed 'profit prospects that induce unites to engage in speculative finance[20] . …one can make on the carry by financing positions in capital assets by long-and short-term debts, and positions in long-term financial assets by short-term, presumably liquid, debts' (*ibid.* p.211). However, the equity finance costs were lower, compared with even short-term interest rate. Therefore, the major role of speculative finance for big corporations could be considered to be played by the equity finances, such as new shares issued, convertible bonds, and warranted bonds. It should be noted that this is the case in the big corporation, especially in the big corporation of manufacturing industries. As shown above, the borrowing ratio is the highest in the small-and medium sized corporation in fiscal years 1986-90 (See Table 4). This makes a sharp contrast to the big corporation in manufacturing industries.

The low costs of equity finances were sustained by the credit relaxation measures, purchase of shares by financial institutions, financing funds by banks, and the price increases of land and shares as a result of them. As previously noted, the bubble creates financial fragility within itself. Therefore, even slight adverse changes of financial conditions lead the corporations to financial difficulties where annual cash flows could not cover debt payments, or bankruptcy. In fact, after the Bank of Japan increased the bank rate several times, share prices dropped sharply and then the land prices began to fall down. This is called the collapse of the 'Myth of Land,' because except temporary exceptional cases the land prices have experienced continuous post-war rises. As the result of an asset price fall, there were drastic and widespread bankruptcies characterised as 'big' not only in number but also in liability size. This tells us that the financial intermediary also suffers from financial difficulties and huge bad loans.

In terms of modelling, generally speaking, bubble burst is the converse case of its expansion. However, the contraction speed is in a sharp contrast with that of the swelling bubble, which is reflected in changes of ω. ω as the basic expectations of debt-asset value ratio is likely to decrease gradually in the expansion period of speculation, because debt values also increase even if less than asset values do. Yet it is very likely to increase rapidly in the contraction period of speculations for two reasons. First, as convertible bonds would not be largely converted into shares, asset values are expected to be smaller and debt values, larger. Second, a drastically declining share price results in the sharp reduction of asset values. These two effects make the numerator of ω larger and the denominator of it smaller. In addition, σ_m as the measure of uncertainty is most likely to be larger because of increasing uncertainty. Thus, (2*a*) shifts upwards greatly and real investment begins to fall. This is also likely to cause (5*a*) downward shift, as μ_m shifts downwards due to shrinkage of real investment. These processes are depicted as in Figure 5.

Figure 5　A Process of the Bubble Bursts



The drastic decrease in asset prices makes lenders' risk increase rapidly, which is connected with the increasing marginal finance costs by borrowing and bonds reflected in the costs of X_2, or the restriction of the amounts of borrowing from shortage of sufficient collateral to cover the risk. The financing costs of X_3 also increase and the volume of X_3 will shrink. Therefore, $X_1 + X_2 + X_3$ becomes smaller with relative increase of X_1, not in absolute terms. This process can be depicted as the shift of (1) from $I_0 + \beta_0 = X_1^0 + X_2^0 + X_3^0$ to $I_0^* + \beta_0^* = X_1^{0*} + X_2^{0*} + X_3^{0*}$ in Figure 5. In fact, the composition ratio of the sum of depreciation and retained earnings as internal funds is conspicuously high in the 1991-92 fiscal year average, as seen in Table 3, compared to ratios of other financing funds. With respect to β_0 as financial investment, it decreases to a large extent since the expansion of fund trusts and specified money trusts is based on share price hikes.

Ⅴ. Conclusion

Japan has not developed sufficiently adaptive, financial institutions to the transmuting economic circumstances. The banking system still retained the legacy of the high growth period, such as the maximization of deposits and high leverage ratio (low equity ratio), even during the bubble period. In the face of decreasing bank loans to big manufacturing enterprises, banks increased loans to small- and medium enterprises and / or non-manufacturing enterprises, especially to the real estate business. This contributed to inducing the swelling asset prices called the 'bubble', combined with speculation of individual economic units. Agency costs had become more important, but the bank neglected them by increasing value of land as a collateral security. At the same time, high leverage ratio has made the banking system fragile against deteriorating business conditions. Share markets should have been developed to promote individual share holdings. Prevailing cross shareholdings amo,ng corporations have discouraged individual share holdings and have made fewer shares appear in the market. It is

considered that this is also one of the factors encouraging speculation, by making manipulation of share prices easier.

Bearing the above in mind, we can proceed to make a summarised comparison between the models of the high growth economy and the bubble economy.

Corporate finance in the high growth period is represented as a simple framework, because the most important finance is bank borrowing, and the residuals are internal funds and new shares issued as minor parts. Therefore, the model in the high growth period is a special case of the model during the bubble economy. However, using two different models serves to highlight characteristics of each as seen above. The two economies, the high growth economy and the bubble economy were created by the common factor, deficit spending that was triggered and /or sustained by the common regime, that is, the easy monetary policy regime. However, purchasing shares by financial institutions and financing funds by banks also encouraged the speculative bubble. Both economies have contrasts in many respects: in addition to increasing bank borrowing vs. deceasing bank borrowing by big manufacturing enterprises, flow vs. stock, real side vs. financial side, and income effect vs. substitution effect. Stocks such as land and shares play more essential roles, and the substitution effect in Eichner's meaning (see note 3) becomes severe through international market competition, as is reflected in the equation (6) of Ⅳ.1.

In addition, this paper contributes to the analysis of the Japanese economy by developing the marginal risk capacity function and the marginal risk premium function ((5*a*) and (2*a*) in Ⅳ.1). Important policy implications appear from the analysis by both functions and the above statements. Our capitalist economies are not as stable as the neoclassical theorists suppose them to be, as stated in section Ⅳ. Even in high growth period, instability of the economy was only hidden, as stated in Ⅲ.4, by buoyant investment activities.

Through examining the high growth economy and the bubble economy, it turns out that the Japanese have pursued risk reduction policies. In 196-73, it created the high growth economy by shifting Kalecki's 'increasing risks' outwards, while it augmented the speculative bubble by inviting underestimation of underlying risks.

Risk reduction policies often represent over-conservatism of unwillingness to implement such a big change as economic reformation. The financial convoy system under the Japanese government regulation was typical example. Even now in 2009, Japan's economic reform is under way. It is necessary to implement 'fundamental changes in order to transform the economy from one focused on reducing risk to one where risk-taking is appropriately rewarded' (Freedman, 2006, p.67).

The saving structure implicit in the discussion of financial provision in section Ⅱ, suggests that even in the late 80s, its structure was still in adaptive situation for the high growth economy. Investment and Kalecki's external markets (government deficit spending and excess export) creates savings, and not vice versa. Thus, in contrast to the neoclassical view, Japan's current surplus is continuously contributing to the world economy as a stagnant factor, as suggested by Halevi and Kriesler (1996), in an ever increasingly interdependent world economy. Accumulating never-utilised currency reserves also means welfare loss for present generations in Japan. This trend has been continuing until recently in 2009, although household saving ratio is gradually declining. In the longer terms, this trend will vanish in the future, because ageing economy is to reduce household saving ratio.

Finally an intention of this paper is a construction of the Eichnerian-Kaleckian models of Japanese corporate finance, in terms of integration of corporate finance and pricing (which is discussed here only implicitly). At present, the corporate finance theory still separates the finance theory from the pricing theory. The current discussion, however, holds that a more integrated analysis of these two will lead to a deeper theoretical understanding of both fields.

*The paper is modified and extended, based on Kanao (1999).

Notes

1) Generally, the high growth periods are considered 1955-73, but this paper may be more appropriate in 1960-73.

2) Eichner (1976) develops very original ideas that pricing of the megacorporation is linked to internally generated funds required for investment. On the other hand, Kalecki states: 'There are two reasons for the increase of marginal risk with the amount invested. The first is the fact that the greater is the investment of an entrepreneur the more his wealth position endangered in the event of unsuccessful business./ The second … is the danger of "illiquidity". … The smaller is the own capital of an entrepreneur investing the amount k the greater the risk he incurs' (1937, pp.442-43).

3) According to Eichner's model, the megacorporation as the price leader has to pay three real costs to obtain internal funds by increasing its price in relation to its costs: '(a) the substitution effect, that is, the loss of market to substitute products …(b) entry factor, that is, the probability of new corporations entering the industry …' (Eichner 1976, p.4). These real costs can be converted into the equivalent of the interest rate referred to as an implicit interest rate. Price increase and internal funds obtained are determined at the point where the implicit interest rate is equal to the permanent interest rate (see *ibid.* p.86 and pp.97-101). The fear of meaningful government intervention as the third real cost is considered to be effective in terms of setting the upper boundary of price increases. Eichner's model explains price increases, not price levels themselves. This brings up difficulties in explaining deflationary cases.

4) Corporations incur losses as real costs to obtain internal funds (due to price adjustments) by making prices higher in relation to costs. These real costs are calculated and compared to the marginal costs of external funds. However, prices in this context are related to price levels, not price increases as in Eichner's model.

5) Eichner's megacorporation can be expected to arrange its financing in such a way that it will choose the minimum borrowing cost during the trade cycle. Eichner (1976, p.86) referred to this minimum cost, considered to be constant during a given cycle, as the permanent interest rate, as in M. Friedman's permanent income.

6) This point was made clear by Davidson (1986, pp.107-108).

7) Investment is constrained by a shortage of liquidity, not by a shortage of savings. This point was made clear by Davidson (1986, pp.108-110) as a result of controversies among Asimakopulos(1983), Kregel(1984-5), Snippe(1985), Asimakopulos(1985),Terzi(1986),Asimakopulos(1986a,1986b,1986c),Richardson(1986),Snippe(1986),and Kregel(1986).

8) Hara (1999 pp.150-59) discusses the importance of Keynes's financial provision in 'mechanism of capital accumulation in Japan'.

9) The corporations here include not only the price leaders but also the price-setting ones as differentiated oligopolists.

10) See Lavoie (1992 p.99).

11) It also can be found in Ikeo (1985, chap. 5) that the relationship between the corporation and the bank is grasped as two person cooperative games, though his discussion is different from mine. Concerning the theory of games, references are made to Nash (1950, 1953).

12) The problem is which constraint comes first, rising marginal costs of new shares issued or the narrowness of share markets. In the figure the corporation faces the former constraint. The vertical dotted line shows the limitation of new shares issued, that is, the narrowness of share markets.

13) This means there exists slightly excess demand for bank borrowings.

14) With these policies, this result of the analysis may be similar to the neoclassical view, though the method is different.

15) More clearly, it was provoked by influx of excessive money supply into real estate such as land. The below analysis is focused on the self-augmentation mechanism of speculative bubble.

16) This contrasts the situation in the big corporations of the non-manufacturing industries. In these corporations, borrowing ratios increase. Therefore, the bank borrowing played a major role in bubble formation and burst. However, the basic mechanism can be analysed by the same model in the similar way below.

17) Values of assets and debts simultaneously increase, but assets surpass debts in value rise. Therefore ω becomes lower.

18) Increasing investment improves expected growth of industries and shifts the function μ_m upward.

19) Superficially, the banks met BIS capital adequacy requirements, but the balance sheet of the banks was fragile as their adequacy capital included latent profits shown as differential between book value and current value in thei share holdings.

20) For the definition of speculative finance, see Minsky (1978, p.15)..

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