A COMPARISON OF JAPANESE CORPORATE FINANCE BETWEEN THE HIGH GROWTH PERIOD AND THE BUBBLE ECONOMY: EICHNER-KALECKIAN MODELLING AND AN ANALYSIS*

Abstract

The two Japanese economies, the high growth period economy and the Bubble Economy have common features, but they are different in many respects. Though different models for analysing these two economies appear here, they are basically the same. They are based on the Eichner-Kaleckian type models, and the model for the high growth period economy could be located as a special case of the Bubble Economy model. The reason for not applying the latter model to both periods is that not doing so makes the common features and differences of both periods clearer. In both economies, the predetermined or exogenous variables, bank loan interest rate in the high growth period and financial investment return net of risk play key roles. Finally, these Eichner-Kaleckian models seem to contradict Post Keynesian endogenous money supply. It is proven below that this is not true.

I. INTRODUCTION

The purpose of this paper is to construct Eichner-Kaleckian type models for comparison of Japanese corporate finance during the high growth period with that in the Bubble Economy. Both economies were produced, in terms of form, by similar factors – deficit spending of economic units – but spending patterns were quite different. In the high growth period, deficit spending was directed mainly towards purchasing new plant and equipment, whereas the Bubble Economy was largely characterised by purchasing assets. Therefore, the high growth period caused a production increase, while the Bubble Economy raised asset values. Both economies enjoyed prosperity (whether it is superficial or not), but their natures are quite different.

This paper constructs economic models of both economies to highlight their characteristic features. 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. 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 enjoyed prosperity, economic growth rates were quite different and therefore substitution effects whose neglect brings us no major problems in the high growth period are more important in the Bubble Economy, which will be reflected in the models below.

Besides corporate finance, analyses of prices behaviour in both economies are also important. This is because the models below are dependent on the link between internal funds for investment and pricing by big enterprises, incorporating the principle of Kaleckian increasing

* This paper was presented at the Faculty of Economics, the University of New South Wales, 29th of July in 1999. I thank the anonymous referees of *Discussion Paper in Economics* series, The University of Queensland, for their helpful comments.

risk[1] into them. Thus, the following models are called Eichner- Kaleckian type models. With respect to the pricing models that are, beyond the risk involved in investment, more general models than Eichner's[2] have been developed (Kanao 1997, pp.126-7 and pp.154-5). However, this issue will not be dealt with here. So the connection between pricing and corporate finance is implicit in the following models.[3] Another thing for the models to be noted is that the interest rate of bank loans in the high growth period and the marginal expected financial return net of risk (in **III:1)** in the Bubble Economy play a similar role to the permanent interest rate[4] in Eichner's model.

Section **II** starts with discussing the high growth period economy. Section **III** deals with the forming and collapsing process of the Bubble Economy as an interaction between real and monetary investment by incorporating Minsky's idea of financial fragility into an Eichner-Kaleckian framework. Section **IV** deals with finance from a macroscopic viewpoint, which supplements the microscopic discussions of Sections **II** and **III**, highlighting the significance of macro-base and endogenous money supply. Section **V** provides a summary and draws out the main conclusions.

II. 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, restriction of interest rates for promoting bank loans to enterprises was also important in this period. Deficit spending by firms served for increasing flow variables, such as GNP.

As flow variables are changes of stock variables, we can describe flow and its change by using the model of Section **III**. However, the features of 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.

II:1 Internal Finance of Additional Investment Funds

According to Eichner, the incremental surplus value has 'two sources: (1) the gains from

---

[1] 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).

[2] 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 firms 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 note 4). 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.

[3] Firms 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.

[4] 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.

technological progress, as manifest by secular decline in average variable and fixed costs, (2) the growth of the firm itself, as manifest by the secular increase in engineer rated [production] capacity' (Eichner 1976, p. 181). 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 firms could have somewhat certain expectations about secular incremental value from the two sources in the future. However, it is evident that oligopolistic firms[5] 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 industry 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. Such a price-cost relation would reflect the fact that the firms 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 firms together with protecting banking and heavy industries policies, even if in reality they were not often carried out in that period.

High economic growth accelerated the growth of this type of manufacturing firms in two ways; one resulted from general expansion, and the other, from a relative decline 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 of each firm 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 firm from its own long-term perspectives.

The income distribution process can be delineated as the process of how the stakeholders of the firms negotiate with the firms 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 firms' debt structures and the dividend share also passively by dividend policy. Then we can focus on the negotiation between labour and the firm over obtaining residual incremental income, as seen below.

The scheduled part of labour remuneration (not including 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). Firms and labour 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

[5] The firms here include not only the price leaders but also the price-setting firms as differentiated oligopolists.

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 1997 pp.178-96).

Thus, we assume 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 firms or industries than the scheduled part, reflecting the earnings of the firms. In fact, the Economic Planning Agency estimated the percentage contribution of each determinant, for the fiscal years 1966-1980, to bonuses making up a larger part of the special pay. Those estimates tell that about 50% was contributed by the percentage increase of the spring wage and the rest, by the current profit rate.[6]

Now, focusing on the latter nature of special pay such as bonuses, we can consider that firms are in a position to use it as their strategy. In other words, we can find ourselves 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 firms-rated all other costs except the other half of the special wages have been determined. Firstly, the firms 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 not reduce their prices compared with the cost reduction than increase their prices. A price increase, of course, will arise whenever costs rise. Secondly, in addition to the above, the firms 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 co-operated, to some extent, towards achievements of the objectives of firms, including some short-term sacrifices for them, and hence firms 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 firms. They can expect in return more bonuses and greater job security only in a growing firm. Thus, we can consider that the labour force employed in the Japanese firms is not merely one of the stakeholders of the firms, but also one having a somewhat strong identification with the firms. The wage system ('seniority order wage system') and the employment practice ('lifetime employment system') which are 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 firm 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, internal additional fund obtained in time t by raising special wages

[6] See, 1982 *Economic Survey of Japan* (Economic Planning Agency ed.), p.246.

such as bonuses at decreasing rate. The total present value of ΔV_t is

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

where k is the number of time periods for restricting the increasing rate of special wages.

In order to compare bond and borrowing costs, the total present value after one period of labour costs including necessary compensation for labour, L is obtained as follows

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

where s is the time perspective entrepreneurs expect to incur the cost. 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 $dL/dV > 0$ and $d^2L/dV^2 > 0$.

II: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 firm. Managers have often longer-term goals than shareholders. Then, the ultimate objective of the firm is power[7] that is 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 firm 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 firm. 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 firm management, if any, should be calculated. Therefore, the net merits as the merits minus the demerits should be included as addition to the marginal finance cost.

[7] See Lavoie (1992 p.99).

For all reasons above 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.

II:3 The borrowing component

Since the firm has a rather narrower scope for discretionary borrowing than 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 firm in this period, we can deal with that transaction behaviour as a non-zero-sum two person co-operative game.[8]

Let us assume that the firm proposes to the bank a certain amount of optimally mixed short-term and long-term borrowing. This proposal can be regarded as the firm's strategy. Then, suppose that the bank imposes some conditions such as the ratio of collateral to loan, the amount of compensatory deposit and the like. A set of these conditions can be regarded as the bank's strategy. If each firm and bank has merely two pure strategies for simplicity, we will be able to obtain the pay-off matrix as seen above. Naturally, we can increase the number of their pure strategies without altering the basic conclusion. Now, a_{ij} (i=1,2; j=1,2) in Table 1 represents the expected profit of the firm, b_{ij} , the expected profit of the bank, and subscripts i and j represent the firm's strategy and the bank's one, respectively. The expected profit of the firm 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.

INSERT TABLE 1

Let P_{ij} be the probability which the firm and the bank give each pair of strategies (i,j) collaboratively, where

$$\sum_{j=1}^{2}\sum_{i=1}^{2} Pij = 1$$

The set of all available mutual expected profits, S is outlined in Figure 1. That is,

$$S = (\sum_{j=1}^{2}\sum_{i=1}^{2} a^{ij} P_{ij}, \sum_{j=1}^{2}\sum_{i=1}^{2} b^{ij} P_{ij})$$

INSERT FIGURE 1

[8] It also can be found in Koike (1985, chap. 5) that the relationship between the firm and the bank is grasped as two person co-operative games, though his discussion is different from mine. Concerning the theory of games, references are made to Nash (1950, 1953) and Koyama (1980).

This feasible set is known as convexity and compactness. However, since the pair of maximum 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, only the shadowed area S^* in the figure is the subject to be taken into account. And now that S^* also is a compact convex set, it turns out that a continuous, real 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 as seen in the above.

II:4 A model of the high growth period

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

min. (a) $C = f(x_1, x_2^*, x_3)$

s.t. (b) $(\Delta I)^* = x_1 + x_2^* + x_3$

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

(2) $i^* = \mu_m - \rho$

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

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

(5) $\sigma_m = \sigma_m(\mu_m)$

Where C is the total finance cost; 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 shares newly issued; i^* is the effective interest rate of additional borrowing predetermined; $\rho$is the marginal risk premium for the firm;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.

The features of the system are as follows. 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, 0 *A*. Therefore 0 *A B*' in the figure, that is, the marginal cost curve of internal finance, *R* is composed of three functions as a horizontal aggregation of each function. Second, we have considered the amount of additional borrowing, x_2 and its conditions, i as predetermined by negotiation between the firm and the bank. Therefore, let them be x_2^* and i^*, as the predetermined variables. Third, the point to note is the introduction of uncertainty and increasing risk into equation (3). 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 the expected value of marginal efficiency of investment μ_m in equation (4) is the decreasing function of ΔI, and that σ_m in equation (5) is the decreasing function of μ_m. It should be noted here that the position of μ_m depends on the firm's expectations of industry growth contained only implicit in the function μ_m and marginal efficiency of investment determines the slope of μ_m curve as in Eichner (1976

chap.3).

The working of the above system is as follows. First, substituting (1), (4) and (5) into (3) yields (3)' $\rho = g[x_2^* / \Delta I, \sigma_m(\mu_m(\Delta I))]$

Let us call (3)' marginal risk premium function. This function could be depicted as a positively sloped curve in the (ΔI,ρ) plane if the effect of increasing risk due to σ_m were not fully cancelled out by the effect of decreasing risk due to $x_2^* / \Delta I$. But ρ here is likely to be much smaller than that in the Bubble Economy to which will be discussed later. Second, substituting (4) into (2) yields (2)' $i^* = \mu_m(\Delta I) - \rho$

Let us call (2)' marginal risk capacity function. This function could be illustrated as a negatively sloped curve in the (ΔI ,ρ) plane.

Thus, the equilibrium value $(\Delta I)^*$ can be obtained from (3)' and (2)'.[9] By substituting $(\Delta I)^*$ into equation (*b*), the determinate solutions of x_1 and x_3 are obtained as the solution of minimisation problem of *C* under constraint (*b*).

Assumptions of $\partial C / \partial x_3 > 0$ and $\partial^2 C / \partial x_3^2 = 0$ are to be considered rational, because a finance fund by the new shares was a minor part, as stated above, in the form of a par issue and therefore, the upward part of the marginal financing cost curve of the fund can be regarded as negligible, as stated above, without undermining our model. Therefore, given a constant value C^* to *C*, C^* would be depicted as a curve with a concave shape towards an origin in the (x_1 , x_3) plane, since we make assumptions of

$\partial C / \partial x_1 > 0$ and $\partial^2 C / \partial x_1^2 > 0$, [10] so that a unique solution can be obtained.

The system above will reverse of the selection order of financing sources, should more stable and longer-term funds be more favourable for the firm's interests.[11] 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 within decision making. On the other hand the firm can properly estimate, to a certain degree, the part of internally generated funds $x_1$obtained without incurring costs.

---

[9] Even if (3)' is depicted as a negatively sloped curve in the (ΔI ,ρ) plane, insofar as the absolute value of slope in (3)' is less than that in (2)' and ρ in (3)' is positive within a relevant value of ΔI (which are considered reasonable assumptions), there exists a stable equilibrium. This is because the case where (2)' is located lower than (3)' in every respect, which corresponds to Minsky (1975, p.127, Diagram 6.4) as depicted in the case of great depression, is eliminated. There are also sufficient reasons to believe that the influence of $x_.^* / \Delta I$ to ρ is small. The reason is that the big firm and bank are closely combined through managerial resources and in addition, as Nakatani (1987, pp.91-106) states, they provide a kind of mutual insurance system with each other. Therefore, normally the shapes of both curves (2)' and (3)' will be just like (5*a*) and (2*a*) in figure3, respectively.

[10] $-dx_3 / dx_1 = (\partial C / \partial x_1) / (\partial C / \partial x_3) = \partial C / \partial x_1 / i_w > 0$. From the assumptions of $\partial C/\partial x_3 > 0$ and $\partial^2 C / \partial x_3^2 = 0$, we can put $\partial C / \partial x_3 = i_w$. And $\partial^2 C/\partial x_3 \cdot \partial x_1 = \partial^2 C / \partial x_1 \cdot \partial x_3 = 0$. Therefore, $-d^2 x_3 / dx_1^2 = \partial^2 C / \partial x_1^2 / i_w > 0$

[11] Abe and Sasaki (1984 pp. 60-61) state as follows: the principle of finance sources for plant and equipment investment is that internal funds should be considered as the first order, the funds by share newly issued, as the second , and the long-term borrowing, as the third.

Therefore, the internally generated funds determined by the system above is only the residual part of x_1. Besides, x_3 also is a minor part of financing funds, as stated above. Thus, considering the fact that a larger part of investment fund consisted of the borrowing fund, and that the firm could not set up its investment project without planning the borrowing, we could conclude that the above system where the borrowing is predetermined, reflects the situation of corporate finance in this period, and hence 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.[12]

Thus, Figure 2 can be obtained. 0*AB*' 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. This figure illustrates that a larger part of additional investment funds is additional borrowing, *BC*, and that the internally generated additional funds, 0*B* and the financing funds of the new shares issued, *CD* are both minor.[13] In the figure, it should be noted that each marginal finance cost has its origin in 0, *B*, and C. Although the graphic expression is unorthodox, it clarifies the relative amount and marginal finance cost of each financing source.

INSERT FIGURE 2

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 corporate finance, and the third discusses the stability of capitalist economies.

Firstly, policies, such as low interest policies which encouraged loans to firms from banks, and the protection of banking and heavy industry which decreased lenders' risk, has 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 firms with banks as shown above. The analysis emphasises this point with buoyant investment activities as the fundamental condition. Without mitigating borrowers' increasing risk the firm could not carry out such a large amount of borrowing. On the one hand the low interest policy makes the marginal capacity curve (which can be depicted by (2)') shift upwards by lowering financing cost. On the other hand the protected industry policy makes the marginal risk premium curve (which can be depicted by (3)') flat and shift downwards by pushing outwards increasing risk. These two points contributed to high growth.

Secondly, the oligopolistic firms' 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 lower real costs that the firms incur to capture internal funds through increasing prices in relation to costs (for meaning of real costs see note 1). In addition the firms could tap another internal financing source by cost adjustments as stated above.

Thirdly, capitalist economies, especially such as the Japanese economy appear stable in the high growth period. However, such a phenomenon is only hidden by buoyant investment

---

[12] See Suzuki (1974 chap. 2).

[13] The problem is which constraint comes first, rising marginal costs of new shares issued or the narrowness of share markets. In the figure the firm faces the former constraint. The vertical dotted line above i^* shows the limitation of new shares issued, that is, the narrowness of share markets.

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

activities. Both the marginal capacity curve and the marginal risk premium curve are intrinsically unstable, because they depend on firms' subjective expectations and have a self-fulfilling nature. Once the role of external markets (export and government deficit)[15] begins to increase, instability of the economy surfaces. Such an economy cannot be sustained long without friction. Friction will give negative influences both curves. These negative influences will further most likely be reinforced by the self-augmentational nature of both curves. This self-augment can be seen in the form of an extreme case as in **III**.

III. A PROCESS OF 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 drastically 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 Economy was caused by misguided policy of expansionary domestic demand combined with financial innovation. These exogenous factors are important, but the Bubble would not have been generated 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. Therefore, Minsky's idea is incorporated into the model below in observing that process, and focusing on the behaviour of firms as the big enterprises.

Finally, the bud of speculation called the Bubble is intrinsic not only in the Japanese economy but also in other capitalist economies.

III:1 A model of corporation finance

Bearing this in mind and considering the economic features described in section **I**, the following equation system can be obtained.

(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) $i_w = i_w(X_3)$
(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

[15] See also Kalecki (1954 p.52).

of financial investment net of risk, and is treated as a constant 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 1997, pp.166-67). The treatment of this simplified assumption makes the discussion clearer. X_1 is similar to x_1 in section **II**, except that X_1 is internal funds for I and β, 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 a 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. They are low finance costs for the firm in comparison with the par issues in the high growth period.

Even though others are similar as in section **II**, 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. It is also considered as an increasing function of X_2/I, that is, $d\omega/d\,(X_2/I) > 0$. Then $d\rho/d\omega > 0$. Second, μ_m is not only the decreasing function of I but also that of R. This means that the firm is not likely to neglect deterioration of the expected value of investment influenced by real cost due to the substitution effect as in Eichner (see note 1), 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 has become more severe. Therefore, the substitution effect could not be neglected. Third, the role of marginal risk premiumρinvolved 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. In fact, as shown below, ρ plays a vital role in the speculative behaviour of big enterprises. Finally, one of the most important things is that during the Bubble Economy, a large part of X_2 and X_3 were financed through markets differently from those in the high growth period, and therefore, agency problems involved in financing by X_2 and X_3 become more important. However, agency costs are implicit in the model above, because these costs are reflected in shifts of (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), we can obtain the determined values of X_1, X_2, X_3, and R. 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.

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

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

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

(2*a*) and (5*a*) are also called, respectively, the marginal premium function and the marginal capacity function, as in (3)' and (2)' of **II:4**. (2*a*) and (5*a*) together with (1) yield 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, $X_2^0 / I = [X_2^0 /(X_1 + X_2 + X_3)] \bullet [(X_1 + X_2 + X_3) / I] = \alpha(1 + \beta/I)$.

INSERT FIGURE 3

This represents that the ratio of debt to real investment, X_2^0 / I increases as either the ratio of debt to financing funds, $X_2^0 / (X_1 + X_2 + X_3)$ as α or the ratio of financial investment to real investment, β rises. Therefore, *ceteris paribus*, the relative increase of β is to rise ρ through the rise of X_2^0 / I. The second is concerned with the pervasive roles of gross profits. Gross profits are valuable sources providing the firm 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 σ_m influences, and then σ_m influences Δ. Also gross profits as 'the signals for investments and current financial commitments' give influences to ω through X_2 / I and then, to Δ.

III:2 The process of the formation of the Bubble Economy

From mid-80s to 89 the deficit spending (expenditures in excess of incomes) in the Japanese economy brought about enormous price hikes 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). According to Okumura (1992), the large corporations financed 1.74 times their funds for the acquisitions of land and the investments of plant and equipment in 1985, 1.14 times in 1986, 1.59 times in 1987, and 1.92 times in 1988. Considering that acquisitions of land included the funds for speculative purposes and the investment amount of plant and equipment was less than the sum of accumulated profits and depreciation allowance, no small part of their funds must have been spent towards speculative purposes.

The role in which the finances of the big corporations played in driving the speculative Bubble is as follows. 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. On one hand, this improves revenue from financial investment connected with share prices, such as specified money trusts and fund trusts, and also makes ω and σ_m lower which induce 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 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 **II: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 $:_m$ outward in equations (5*a*) and (2*a*), 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 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, warranted bonds, and shares as involved 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.

INSERT FIGURE 4

Table 2 shows that in composition ratios, the finances of manufacturing big firms 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.

INSERT TABLE 2

Sustained by the easy money policy, the big 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. The asset price hikes play another role in promoting speculative behaviour. The price hikes make ρ smaller because the big corporations could easily cover their business loss by disposing of their increasingly valuable assets even if they failed in gaining profits. Thus the above speculative process continues to repeat itself with incremental real and financial investments.

The formation process of the Bubble Economy can be described as stated above. It should be noted that the Bubble created financial fragility within itself. Therefore, even slight adverse changes of financial conditions cause financial difficulties where annual cash flows could not cover debt payments, or bankruptcy.

III:3 The process of the 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. Therefor, there were 'profit prospects that induce unites to engage in speculative finance.[17]…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 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 especially in the big enterprises of manufacturing industries, and also that the borrowing ratio is higher in the small enterprises.

The low costs of equity finances were sustained by the credit relaxation measures and the price increases of land and shares as a result of them. As previously noted, the Bubble created financial fragility within itself. Therefore, even slight adverse changes of financial conditions lead the firms 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

[16] This contrasts the situation in the small firms of the manufacturing industry and non-manufacturing firms. In these firms, borrowing ratios increase.

[17] For the definition of speculative finance, see Minsky (1978, p.15).

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 liabilities.

In terms of modelling, generally speaking, the bursting of the bubble is the converse case of its expansion. However, the contraction speed is in a sharp contrast with that of the swelling of the Bubble, which is reflected in changes of ω. ω as the basic expectations of debt to asset value ratios 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 drastic fall of 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.

INSERT FIGURE 5

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 2, 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.

IV. MACROSCOPIC VIEW OF FINANCE AND INVESTMENT

As internal additional funds are obtained by buoyant revenues, raising prices or adjusting costs, it seems as though the funds necessary for investment were gained entirely from outside. What was stated above proves to be true from an individual entrepreneur. However, investment basically finances itself as a whole. It could be called a kind of fallacy of composition like in Kaleckian capitalist profits. The statement below is concerned with the way investment finances itself and savings created by investment compose sources of funds.
Suppose that investment rises by 100. Investment increases prior to (planned) savings and is financed by bank loans. These loans make up business deposits[18] of the enterprises that received the credit necessary for meeting production on investment orders. The enterprises must pay not only incomes, as wages and profits, but also material costs by these business

[18] For the meaning of terms, income deposits, business deposits, and savings deposits, see Keynes (1971, pp.30-32). Income deposits and savings deposits in this paper are used as covering all income and savings.

deposits. Thus, the business deposits circulate from business deposits to business deposits, creating income deposits.[19] These reiterative processes create the income deposits in total equal to the investment increase in investment industries. Let, say, 60% of the income be consumed. (The average and marginal propensity to consume is 0.6.) Savings deposits[20] created are 40. A consumption increase of 60 creates equal income deposits through circulation of business deposits as is stated above. Of 60 income deposits, 24 become savings deposits.

By these reiterative processes, saving deposits in total is finally equal to investment increase. For simplicity, the statement in this paragraph depends on the assumption that the increases of imports and taxes are neglected. Now, we are able to describe the compositions of corporate finance from a macroscopic point of view. The enterprises that produced investment goods on initial orders receive 40 as a part of payments from the investment sector including themselves and 60 as the other part from the consumption sector by selling their investment goods, if investment goods are utilised in direct ratio to sales across the economy. The firms of the investment sector and consumer sector finance their funds through internal funds as savings deposits of firms, bank loans (especially long-term loans), and issuing bonds and shares. The sources of their funds come from savings deposits of firms and households. The deposits of the latter are directed towards bank deposits, and purchasing bonds and shares. Excessive bank deposits (as the part of households' savings) over purchasing bonds and shares are appropriated for the loans (especially long-term loans) to the firms and the banks' holding of bonds and shares based on the banks' profitability. Thus the initial short-term borrowing of the firms can be paid back, as in the Asimakopulos's case (1983).

He argued as follows: the conditions that validate the smooth independence of investment increase from a prior saving increase are the willingness of banks to accept a deteriorating liquidity position and the smooth funding from short term liability to long term liability (Asimakopulos 1983).[21]

These two conditions were fulfilled during the high growth period and the Bubble Economy in Japan, that is, by the Bank of Japan's overloans and by asset price hikes through the easy monetary policy respectively. However, prosperity makes 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.[22] As Keynes said, the increase of financial provision means that 'we are aggravating the difficulty of securing equilibrium tomorrow' (1973, p.105). However, the problems of financial provision have been hidden in the high growth period and the Bubble Economy. After both periods, overinvestments manifested themselves, especially, conspicuously after the Bubble Economy. From macroscopic corporate finance, Table 3 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 Economy.

---

[19] For the meaning of terms, income deposits, business deposits, and savings deposits, see Keynes (1971, pp.30-32). Income deposits and savings deposits in this paper are used as covering all income and savings.

[20] For the meaning of terms, income deposits, business deposits, and savings deposits, see Keynes (1971, pp.30-32). Income deposits and savings deposits in this paper are used as covering all income and savings.

[21] There exist some controversies and Asimakopulos's replies around Asimakopulos (1983). For these, see Snippe (1985), Asimakopulos (1985), Terzi (1986), Asimakopulos (1986a), Richardson (1986), Asimakopulos (1986b), Snippe (1986).

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

INSERT TABLE 3

V CONCLUSION

As seen above, the models here are quite different from both the orthodox corporate finance models, as in the MM (theorem) models,[23] and the agency models. The models in this paper are based on fundamentally different assumptions from these two types of theories, because the firms are supposed to be organisations pursuing their own goals, separated from shareholders themselves as mentioned in **II:2**. In addition, it is clear that the division of stakeholders of the firms into agencies and principals is inappropriate, as far as the Japanese firms are concerned, because the management of the Japanese firms do not have only loyalty to the firms but also have a long-term perspective of the situation. Therefore, relations between firms and their management are better described by grasping the management, rather as the agency of the firms than as the agency of the shareholders. The shareholders are only one of stakeholders of the firms.

Bearing the above in mind, we can proceed to make a summarised comparison between the models of the high growth period 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 policies, that is easy monetary policies. However, both economies have contrasts in many respects: non-market vs. market, flow vs. stock, real side vs. financial side, and income effect vs. substitution effect.[24] Therefore, during the Bubble Economy, agency costs which the market charges on financing external funds are more important, stocks such as land and shares play more essential roles, and the substitution effect in Eichner's meaning (see note 2) becomes more important through international market competition, as is reflected in the equation (3) of **III:1**.

In addition, this paper contributes to the analysis of the Japanese economy by developing the risk capacity function and the risk premium function ((2)' and (3)' in **II:4**, (5*a*) and (2*a*) in

---

[23] See Modigliani, F. and Miller, M. (1958) and Modigliani, F. and Miller, M.(1963).

[24] In high growth period the bank borrowing as the major financing source can be regarded as determined by personal negotiations between the firm and the bank. Share market was immature as shown above. On the other hand, various financing sources through markets such as equity finances (shares, warranted bonds, convertible bonds) and straight bonds etc. have been developed until the Bubble. Borrowing composition ratio decreased drastically in 1986-90, and is negative value, -1.0 as seen in table 2. In addition these equity finances played one of key roles in the Bubble economy. Therefore, the point-blank expression of the corporate finances between both periods could be called non-market vs. market. For explanation of income effect vs. substitution effect see **II:2** and **III:1**. For the meaning of flow vs. stock see the entry of **III**. For the increasing importance of financial side, after showing that the ratio of the amounts of exchange transaction to current transaction in the world was very high even in 1986 and rapidly increasing from 1986 to 1989, Miyazaki (1992) states: 'since 1970s the financial economy has been becoming the leading factor of the world economy [including Japan] by replacement of the real economy'(p.13, [ ] added). The analysis of **III**, as shown above, cannot be done without considering the real-monetary interactions.

III:1). Important policy implications appear from the analysis by both functions and the above statements. Our capitalist economies are not so stable as the orthodox equilibrium theorists suppose them to be, as stated in section **III**. Even in high growth period, instability of the economy was only hidden, as stated in **II:4**, by buoyant investment activities.

New waves of financial revolution and deregulation are under way in Japan and also internationally. On the one hand, both are certainly useful in terms of resource allocations world-wide. On the other hand, they tend to increase instability factors, especially by speculation, because both functions are intrinsically unstable and instability factors from abroad can have a deleterious impact on the domestic stability of both functions through increasingly close interactions of the world economy. This suggests us further necessities for the establishment of controlling and stabilising systems in the world economy through further international cooperation, even although we have already had domestic Keynesian monetary and fiscal stabilisation policies.

Furthermore, Japan has not developed sufficiently adaptive financial institutions to the changing economic circumstances. The banking system still retains the legacy of the high growth period, even during the Bubble Economy. Share markets should have been developed to promote individual share holdings. Prevailing cross shareholdings among firms has discouraged individual share holdings and has made fewer shares appear in the market. It is also considered that this was one of the contributing factors to accelerating the Bubble, by making manipulation of share prices easier.

The saving structure implicit in the discussion of financial provision in section **IV**, suggests that they are still in the adaptive situation for the high growth economy. Savings are excessive simply in terms of conversion of investment funding from short-term liability to long term liability. In other words, savings are appropriated for purchasing bonds and shares newly issued, and borrowing long-term loan, which are used for purchasing investment goods. This makes the timely repayment of short-term bank loan possible, as shown in section **IV**. Investment and Kalecki's external markets (government deficit spending and excess export) creates savings, and not vice versa. Thus, in contrast to the orthodox 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 foreign exchange also means welfare loss for present generations in Japan. Now is the time when Japan should consider more seriously reducing over precautionary savings by individuals through changing the content of public expenditures.

Finally this article is rare type of analysis of Japanese corporate finance, in terms of integration of corporate finance and pricing (which is discussed here only implicitly). At present corporate finance theory still separates finance theory from 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.

REFERENCES

Abe, T. and Sasaki, K. (1984) *Topics on Corporate Finance*, (in Japanese) Toyokeizai-shinposha.

Asimakopulos, A. (1983) 'Kalecki and Keynes on finance, investment and saving,' *Cambridge Journal of Economics*, Vol. 7, Ns 3/4.

Asimakopulos, A. (1985) 'Finance, saving and investment in Keynes's economics: a comment,' *Cambridge Journal of Economics*, Vol. 9, No. 4.

Asimakopulos, A. (1986a) 'Finance, investment and saving: a reply to Terzi,' *Cambridge Journal of Economics*, Vol. 10, No. 1.

Asimakopulos, A. (1986b) 'Richardson on Asimakopulos on finance: a reply,' C*ambridge Journal of Economics*, Vol. 10, No. 2.

Eichner, A. (1976) *The Megacorp and Oligopoly,* Cambridge University Press.

Economic Planning Agency ed. (1982) *Economic Survey of Japan* (in Japanese), Printing Bureau, Ministry of Finance.

Economic Planning Agency ed. (1993) *Economic Survey of Japan* (in Japanese), Printing Bureau, Ministry of Finance.

Economic Planning Agency ed.(1994) *Economic Survey of Japan* (in Japanese), Printing Bureau, Ministry of Finance.

Hara, Masahiko(1999) 'Effective Demand Analysis of Japanese Economy,' *Bulletin of the Faculty of Commerce Meiji University* (in Japanese), Vol. 81, Ns 3/4.

Japan Development Bank(1992) *Investigation: Money Flow in 1980s and Corporate Finance after this*, No. 162

Kalecki, M. (1937) 'The Principle of Increasing Risk,' *Economica*, N.S. Vol. 4, No.16.

Kalecki, M. (1954) *Theory of Economic Dynamics*, London, George Allen and Unwin.

Kanao, T. (1989) *Dynamics of Modern Economy* (in Japanese), Gakubunsha.

Kanao, T. (1997) *A Theory of Price*, *Finance*, *and Distribution* (in Japanese), Nihon-keizaihyoronsha.

Keynes, J. M.(1971) *Collected Economic Writings*, Vol. 5, *A Treatise on Money*. *The Pure Theory of Money*, London Macmillan.

Keynes, J. M.(1973) *Collected Economic Writings*, Vol. 7, *The General Theory of Employment*, *Interest*, *and Money*, London Macmillan.

Koike, K. (1985) *Japanese Financial Market and System* (in Japanese), Toyokeizai.

Koyama, A. (1980) *An Introduction of the Theory of Games* (in Japanese), Nihonkeizai-shinbunsha.

Kriesler, P. and Halevi, J. (1996) 'Asia, Japan and the Internationalization of Effective Demand', *Economies et Soci*etes, Monnaie et production, Serie M.P., n^0 10, 2-3.

Lavoie, Marc (1992) *Foundations of Post-Keynesian Economic Analysis*, Edward Elgar.

Minsky, H. P. (1975) *John Maynard Keynes*, Columbia University Press.
Minsky, H. P. (1978) 'The Financial Instability Hypothesis: A Restatement,' *Thames Papers in Political Economy*, Thames Polytechnic.

Minsky, H. P. (1986) *Stabilizing an Unstable Economy*, Yale University.

Miyazaki, Y. (1992) *The Combined Recession*, Chukoshinsho.

Modigliani, F. and Miller, M. (1958) 'The Cost of Capital, Corporation Finance and the Theory of Investment,' *American Economic Review*, Vol. 48, No. 3.

Modigliani, F. and Miller, M. (1963) 'Corporate Income Taxes and the Cost of Capital: A Correction,' *American Economic Review*, Vol. 53, No. 3.

Nakatani, I. (1987) *Transforming Japanese Corporation*, Kodansha.

Nash, J. (1950) 'The Bargaining Problem,' *Econometrica*, April.

Nash, J. (1953) 'Two-Person Cooperative Games,' *Econometrica*, January.

Richardson, D. (1980) 'Asimakopulos on Kalecki and Keynes on finance, investment and saving,' *Cambridge Journal of Economics*, Vol. 10, No. 2.

Snippe, J. (1985) 'Finance, saving and investment in Keynes's economics,' *Cambridge Journal of Economics*, Vol. 9, No. 3.

Snippe, J. (1986) 'Finance, saving and investment in Keynes's economics: reply,' *Cambridge Journal of Economics*, Vol. 10, No. 4.

Steindl, J. (1941) 'On Risk,' *Oxford Economic Papers*, Number 5, March.

Suzuki, T. (1974) *Money and Banking in Contemporary Japan* (in Japanese), Toyo- keizai.

Terzi, A. (1986) 'Finance, investment and saving: a comment on Asimakopulos,' *Cambridge Journal of Economics*, Vol. 10, No. 1.

Wood, A. (1978) *A Theory of Pay*, Cambridge University Press.