

THE "LOW INTEREST RATE POLICY" AND ECONOMIC GROWTH IN POSTWAR JAPAN

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I. INTRODUCTION

THE Japanese economy has expanded at an unprecedentedly fast rate since the end of World War II. Its growth rate was especially remarkable in the period from the early 1950s to the beginning of 1970s. Many economists argue that the rapid economic growth was an achievement produced by an explicit policy framework which Japanese policymakers deliberately prepared. For instance, the Ministry of International Trade and Industry is said to have successfully promoted various industrial policies which substantially stimulated development of the heavy and chemical industries. These industries are regarded as the keystones on which Japanese economic growth has depended.

It has also been a conventional proposition that the industrial policies were supported by a "low interest rate policy" and other systematic financial policies. Although this "low interest rate policy" (*tei-kinri seisaku*) is the term Japanese economists have most frequently used, its definition is rather ambiguous in most cases. Here, we may define it as a combination of regulation on some interest rates and comprehensive control on financial allocation. According to the conventional view, the "low interest rate policy" was effective in attaining financial allocation favorable to rapid economic growth. More specifically, the regulation on interest rates on bank deposits and loans could reduce financial costs for ultimate borrowers, in particular for business firms. Furthermore, the public authorities' administrative guidance on private banks could influence their loan supply behavior so as to allocate more funds to some key industries than the amount they could have obtained in the absence of such guidance. The above is a simplified version of the conventional view which has asserted the effective influence of the "low interest rate policy" as an ingredient of growth stimulating policies.

This conventional view is a charming hypothesis. At first sight, it seems to be very convincing. We cannot deny the fact that Japan succeeded in extra-

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ordinary growth in the period from the early 1950s to the beginning of 1970s. At the same time, we can find many regulations and administrative guidance which could be called instruments of the low interest rate policy. However, it is simplistic to derive a causality relation between the low interest rate policy and the high economic growth from these observations. We must determine whether the low interest rate policy was really effective and, if so, in what ways it promoted economic growth. This paper is devoted to these investigations. In the following, we shall present both some statistical data and some theoretical speculation which question the validity of the conventional view concerning the low interest rate policy. The following analyses will suggest that this conventional view lacks a solid foundation.

II. INTEREST RATES IN THE ERA OF RAPID ECONOMIC GROWTH

It is well known that most nominal interest rates were formally or informally regulated in the era of rapid economic growth.¹ However, they were not fixed at substantially lower levels in comparison with rates since the early 1970s, or with the rates in other advanced economies at the time. Moreover, even if interest rates had been fixed at low levels, this would not have suggested an overall low interest rate policy in the sense that every ultimate borrower could acquire necessary funds at a low cost in the financial markets. A simple theoretical speculation suggests that the pattern of economic growth was not essentially influenced by the existence of "controlled" interest rates, i.e., the official discount rate and deposit rates.

In order to attain overall low interest rates, the Bank of Japan would have had to pursue an easy money policy by accommodating the strong demand for funds associated with rapid economic growth. It should be emphasized, however, that the Japanese monetary authorities did not, or more accurately, could not adopt an easy money policy in this era. We shall review the movement of some important interest rates in detail to make these points clear.

A. *Official Discount Rate, Deposit Rates, and Money Market Rates*

1. *Were they low?*

Table I compares the official discount rate, an interest rate on bank deposits, and a representative money market rate, i.e., the call money rate in Japan, with those in the most advanced countries, the United States, the United Kingdom, and Germany. According to the table, during the 1950s and 1960s interest rates

¹ Before proceeding with our investigation, we must define "the era of rapid economic growth." We may define that era as the two decades from 1953 to 1972, since the period before the early 1950s can be regarded as a time of rather unstable reconstruction; and by 1953 the main indicators of economic growth, particularly gross national products, had slightly exceeded the prewar level. See Goldsmith [6, p. 146] and Table VII in the present paper.

TABLE I
OFFICIAL DISCOUNT RATES, DEPOSIT RATES, AND MONEY MARKET RATE
(ANNUAL AVERAGE)

	(%)					
	1953-57	1958-62	1963-67	1968-72	1973-77	1978-82
Japan:						
Discount rate	6.9	7.1	5.9	5.4	7.1	5.6
Call money rate	8.7	9.6	7.4	7.0	8.6	7.1
Deposit rate ^a	5.1	5.3	5.0	5.0	6.0	5.2
WPI rate of change	1.1	-1.0	1.4	1.3	11.4	5.1
CPI rate of change	3.1	3.6	5.6	5.9	13.1	4.6
U.S.:						
Discount rate	2.4	3.1	4.2	5.2	6.5	11.0
TB rate	2.1	2.7	4.0	5.4	6.2	10.7
Deposit rate ^b	2.6	3.2	5.0	5.0	5.5	5.7
WPI rate of change	1.0	0.3	1.1	3.6	10.4	9.1
CPI rate of change	1.2	1.5	2.0	4.6	7.7	9.8
U.K.:						
Discount rate	4.7	4.7	6.4	7.2	11.4	14.5 ^e
TB rate	3.5	4.4	5.2	6.6	9.9	12.2
Deposit rate ^d	2.8	2.7	4.4	4.9	8.2	11.2
WPI rate of change	1.7	1.4	2.3	5.8	17.9	11.4
CPI rate of change	2.9	2.2	3.3	6.6	16.3	12.0
Germany:						
Discount rate	3.8	3.4	3.6	4.7	4.6	5.8
Call money rate	3.7	4.0	3.8	5.3	6.3	7.7
Deposit rate ^e	3.5	2.9	3.1	5.4	6.0	6.8
WPI rate of change	-0.5	0.5	0.9	2.6	6.2	5.4
CPI rate of change	0.9	2.0	2.7	3.5	5.7	5.8

Sources: International Monetary Fund, *International Financial Statistics: Supplement to 1963/64 Issues* and *International Financial Statistics: 1977 Supplement Annual Data 1952-76*; Bank of Japan, *Gaikoku keizai tōkei nenpō* [Foreign economic statistics annual], 1970 and 1982 editions.

^a The interest rate on six-month deposits.

^b The interest rate on time deposits less the U.S.\$100,000 (maximum). From 1953 to 1967, the maximum rate on deposits of more than one year.

^c 1978-80. The Bank of England stopped announcing the minimum lending rate, i.e., the discount rate.

^d The interest rate on deposits account repayable at seven days' notice (maximum).

^e The interest rate on three-month deposits (maximum).

were higher in Japan than in the other three countries. This is true not only in nominal terms. In terms of real interest rates, which are estimated by deducting the actual rate of inflation from the respective nominal rates, the Japanese rates were substantially higher than those in the other three countries.

Furthermore, Table I shows that Japanese interest rates in the era of rapid economic growth were not necessarily lower than they have been since the early

1970s. Since nominal interest rates are in general apt to be adjusted only partially for inflation,² it may seem natural that in the latter period, which suffered from galloping inflation, the real interest rates declined to substantially lower levels in comparison to the former period. However, even the nominal interest rate levels appear to have been rather higher in the era of rapid economic growth than they have been since.

Of these interest rates, the call money rate has been freely determined in the interbank money market, although at times monetary authorities attempted administrative guidance. We can suppose that the demand and supply relation in the call money market essentially determined the level of the call money rate.

In contrast, the official discount rate is set at the discretion of the Bank of Japan, and bank deposit rates have been under rigid control based on the Temporary Interest Rate Adjustment Law (*rinji kinri chōsei hō*). We can label these the “controlled interest rates.” As we have seen, even the “controlled” interest rates were not lower in the era of rapid economic growth compared with those of the other major countries or those rates in the period since that era.

The above observations throw doubt upon the conventional argument that the Japanese monetary authorities adopted a “low interest rate policy” in the era of rapid economic growth. However, we may have to pay attention not to the level of each interest rate, but to the following relationships among them; i.e., in Japan both the official discount rate and the deposit rates have almost always been set at substantially lower levels than the call money rate. We cannot find this relationship in the other three countries.³ Thus, the relatively low levels of the controlled interest rates may be interpreted as a Japanese low interest rate policy.

2. *Non-price competition for bank deposits*

Of course, the regulation of deposit rates was not completely effective. Many banks were secretly willing to offer specially high rates on large deposits. Moreover, there is always some room for non-price competition even under regulations. Some economists, and most bankers as well, argue that Japanese banks have fiercely competed with each other for deposits through non-price means. If their arguments are valid, it would imply that the deposit rate regulation was not effective. Therefore, whether or not the deposit rate regulation contributed to economic growth would immediately become a meaningless question. In reality, however, the Ministry of Finance has strictly regulated non-price com-

² See Summers [19, pp. 201–41].

³ As Sakakibara et al. [16, p. 39] claim, a discount rate which is always lower than the representative money market rates is not peculiar to Japan. Quite a similar relationship has been observed both in Italy and France. However, the discount rate has been set at a higher level than that of the TB rate in the United States and the United Kingdom. In Germany, it was slightly higher than the call money rate in the 1950s and 1960s. It was not until the early 1970s that the former began to be consistently lower than the latter.

TABLE II
CHANGES IN THE NUMBER OF BRANCH OFFICES, DEPOSITS, AND LOANS
(ANNUAL AVERAGE)

	City Banks			Local Banks			Thrifts ^a		
	Branch	Deposits	Loans	Branch	Deposits	Loans	Branch	Deposits	Loans
1951-55	-0.1 ^b	18.8 ^c	6.2 ^c	4.4	14.5 ^c	11.7 ^c	8.4	19.4 ^c	16.6 ^c
1956-60	-0.4	18.5	20.5	-0.1	20.0	20.0	4.0	24.3	24.5
1961-65	3.1	17.7	18.3	1.9	19.5	19.3	5.6	26.2	24.9
1966-70	1.1 ^d	14.3	14.9	1.2 ^d	15.4	16.4	3.1 ^d	17.8	19.1
1971-75	0.9	17.2	17.2	2.7	18.3	18.0	3.3	20.3	18.9
1976-80	1.2	10.4	8.4	2.6	12.1	10.4	3.3	11.8	11.2

Sources: [3] [4].

^a The thrifts are comprised of mutual loan and savings banks, credit associations, and credit cooperatives.

^b In 1955, Nihon Kangyo Bank and Hokkaido Takushoku Bank began to be classified as city banks. This reclassification increased the number of city bank branch offices abruptly by 230. The effect of this reclassification is adjusted for in this table.

^c 1954-55.

^d In 1968, Nihon Sogo Bank, the largest of the mutual loan and savings banks at that time, was converted to a city bank. Saitama Bank was converted from a local to a city bank in 1969. The effects of these conversions are adjusted for in this table.

petition. For example, it has not allowed banks to make up for low interest rates by freely offering gifts to their depositors.⁴

During the era of rapid economic growth, the most effective means of engaging in non-price competition was in bank's branch offices. Banks could increase their ability to attract new deposits by building branch offices in business districts. Because of the Ministry of Finance's branch office administration (*tenpo gyōsei*), however, they were neither free to expand, nor to change their branch networks.

Since branch offices were quite essential to banking at that time, branch office administration was one of the most powerful weapons of the monetary authorities. It is noteworthy, however, that this weapon was not used for the purpose of stimulating economic growth. In the administration, the Ministry of Finance obviously gave preferential treatment to thrift institutions, i.e., the various financial institutions for medium and smaller businesses. Owing to this preferential treatment, thrift institutions could expand their branch office networks faster than city banks could. Table II clearly shows this fact. This is one of the reason why the thrifts could continue to maintain a stable share of the financial markets.

Thus, branch office administration and control were used to directly support the thrift institutions and indirectly support their customers, i.e., medium and smaller businesses. This suggests it would be an exaggeration to argue that Japanese financial policy tended to favor both big banks and big businesses for

⁴ See the administrative notification issued by the Ministry of Finance to private banks on May 12, 1965. The notification is compiled in [11, pp. 76-77].

the purpose of promoting economic growth.⁵ The policymakers had to pay a great deal of attention to the economic and financial environment of medium and smaller businesses for political reasons. The Ministry of Finance's administration on branch offices reflected this fact.

B. *Regulation on Interest Rates and Economic Growth: A Theoretical Speculation*

From 1954 to 1972, increases in deposits and in borrowings from the Bank of Japan respectively accounted for approximately 70 per cent and 3 per cent of the yearly increments in the private financial institutions' liability.⁶ The regulation setting deposit rates and the official discount rate at low levels in comparison with the interbank money market rate implied, therefore, that they could obtain handsome benefits either by collecting deposits, or by borrowing from the Bank of Japan.⁷ Did the regulation contribute to Japanese economic growth? More specifically, was the regulation effective in attaining lower costs of funds for the ultimate borrowers, in particular nonfinancial businesses; and did it stimulate investment more than if the regulation had not been adopted? Since we have no experience with a financial market completely free from interest rate regulation, we cannot answer this question by any means other than theoretical speculation. In the following, we shall consider this question by making use of a simple model.⁸

We must consider two types of influence which interest rate regulation is expected to exert on our economy: (a) the influence on the composition of financial assets chosen by the public, and (b) the influence on the total amount of savings. Some economists emphasize the importance of (a).⁹ The existence of interest rate regulation is likely to influence portfolio choice by the public. However, as the following investigation will make clear, this influence in itself will not change the pattern of economic growth on the assumption of an appropriate monetary policy. It is not (a) but (b) that is essential to economic growth.

The basic assumptions of our theoretical model are as follows. (1) The private nonfinancial sector comprises households and firms. (2) The households invest their saving into three financial assets, i.e., cash, bank deposits, and stocks. (3) The firms finance their investment either by borrowing from banks or by issuing stocks to the households.¹⁰ (4) Financial institutions obtain funds through

⁵ See Goldsmith [6, pp. 166-68 and p. 176] and Horiuchi [8, pp. 29-60].

⁶ See the Bank of Japan [1] [2].

⁷ See, for instance, Iwata and Hamada [10, pp. 203-9] and Teranishi [20, pp. 483-94].

⁸ The formal exposition of the model is explained in the Appendix.

⁹ Especially, see Wijnbergen [25].

¹⁰ In the first half of the rapid economic growth era, the stock issue was rather important for some businesses. According to [1], it accounted for approximately 17 per cent of the increase in the private nonfinancial sectors' liabilities in the 1950s and the early 1960s. During the same period, borrowing from private financial institutions was 64 per cent of the increase. According to [1], 70-80 per cent of the stock issue was directed to the nonfinancial sectors.

households' deposits and borrowing from the Bank of Japan. They retain part of the funds as reserves and distribute the remainder either as call loans or as loans to firms. (5) The Bank of Japan supplies a monetary base only through its lending to private banks. The monetary base was absorbed partly by the households' cash holding and partly by the banks' reserves. (6) Financial institutions are only participants in the interbank money market, i.e., the call money market. Therefore, their *net* holdings of call loans must be zero in equilibrium. The call money rate is flexibly adjusted so that this condition is satisfied. (7) The bank deposit rates are exogenously fixed, and the banks accept the household deposits passively. (8) The bank loan rates are not flexibly adjusted. Firms snap up every loan the financial institutions are willing to make, as the loans are assumed to be offered at below market interest rates. The remainder of their credit needs is met by the stock market. (9) Equilibrium in the real goods market is represented by the equality of the firms' investment with households' saving. This equality determines the level of the national product.

1. *The regulation on deposit rates*

Now, we shall assume that the regulation pulls deposit rates down, and thereby reduces households' demand for bank deposits on the one hand, and increases their cash demand on the other hand. This change in the composition of the households' financial assets makes funds less available to the financial institutions, by and large leading to a tightening of the interbank money market. This tightening, accompanied by a higher level in the call money rate, suppresses the financial institutions' loan supply to the firms. Thus, investment expenditure by the firms is reduced. In consequence, the regulation of deposit rates has, *ceteris paribus*, a depressive effect on the economy.

By contrast, assume that the regulation of deposit rates induces households to shift their portfolio from bank deposits into stocks. As in the former case, the amount of funds available to the financial institutions is reduced in this case. The call money rate increases, and the loan supply to firms is decreased. However, the firms can raise more funds by issuing more stocks. On the whole, the amount of funds supplied to them is increased, because by assumption the fund supply through the stock market can avoid "leakage" in the form of reserves.¹¹ Therefore, in this case, the regulation seems to have a stimulating effect on economic growth.

The above consideration appears to suggest that whether the deposit rate regulation is helpful for economic growth or not is dependent on (a) mentioned above, the public's choice of assets. However, this is not relevant in the context of the present paper. Certainly, the deposit rate regulation will affect, *ceteris paribus*, the level of the national product by changing the composition of households' assets. But policymakers can compensate for the effects by adjusting

¹¹ See Wijnbergen [25, p. 440]. In his model, the curb market plays the role assigned to the stock market in this paper.

monetary policy. For instance, in the case where the deposit rate regulation brings about a depressing impact on the national product by shifting public assets from deposits to cash, the central bank can offset the impact by increasing the monetary base through its discount window. On the other hand, if the regulation has an expansionary effect, the central bank can take a more stringent stance in its monetary policy than it takes in the absence of the regulation, in order to preserve a full employment level of production.

When we take up the medium- or long-term problem of economic growth, it can be assumed that full employment is attained by the appropriate monetary control. At least as far as the Japanese economy in the era of rapid economic growth is concerned, this assumption is valid. Based on this assumption, type (a) regulation is not an important consideration. It is (b), how the deposit rate regulation affects public savings, that is essential to economic growth.

If the deposit rate regulation reduces the amount of savings as compared with the amount of savings in the absence of the regulation, capital accumulation at the level of full employment will be retarded regardless of how it affects the public asset composition. On the contrary, if the regulation increases the amount of savings, it will stimulate economic growth. Although some economists argue that higher deposit rates will increase the savings rate,¹² theoretically it is ambiguous whether their argument is true in general. There seems to be no evidence to show that deposit rate regulation had the effect of reducing the savings rate in postwar Japan. Thus, we cannot derive any definite answer to the question of whether the regulation contributed to Japanese economic growth or not.

2. *The control of the official discount rate*

The analysis concerning the impact of official discount rate controls is a very simple one. In our model, the level of the official discount rate does not exert any effect on the national product and investment expenditures at all. Assume that setting the official discount rate at a relatively low level induces the financial institutions' loan supply to increase. For the actual supply of loans to be increased, it is obviously necessary that the amount of funds available to the financial sector as a whole be increased. If the Bank of Japan does not supply additional funds, the call money rate will eventually rise to such an extent that the incentive for loan increases supplied by the relatively low discount rate is fully offset. Because of this offsetting rise in the call money rate, setting the discount rate at a low level does not lead to an increase in the loan supply to the firms.

3. *The regulation on loan rates*

Now, we will consider the case in which the regulation lowers the level of the bank loan rates, which in this paper are assumed to be exogenously fixed. If

¹² See McKinnon [14, pp. 14-16] and Shaw [17, pp. 80-87].

the firms' investment demand is independent of the exogenous loan rates, any effect of the regulation will be eliminated by flexible adjustment in the call money rate. However, if the firms' investment demand is inversely related to the loan rate, the impact of the regulation on capital accumulation depends upon what relationship households' savings has on stock yield. If savings correlates with stock yield positively, the increase in the firms' investment demand induced by the lower loan rate will be at least partially realized by the increase in households' saving associated with a rise in stock yield. Thus, in this case, the regulation on loan rates will to some extent contribute to economic growth. However, in practice, it is far from certain that households' savings does respond positively to changes in stock yield. It is highly probable that the response, if any, is negligible. If so, the effect of the regulation on economic growth will also be negligible.

In summary, how the regulation of interest rates affects economic growth is dependent on the response of savings to changes in the interest rates. Since it is impossible to derive any definite conclusions concerning this point, we may say that the interest rate regulation has only an ambiguous effect on economic growth. This conclusion seems to be sufficiently applicable to the case of Japanese economic growth.

4. *Keiretsu groups of banks and firms*

So far we have assumed no specific connections between banks and non-financial firms. This may seem as unrealistic to those who emphasize the existence of strong *keiretsu* (lineage) groups between them. However, the existence of *keiretsu* groups does not alter the results obtained from our theoretical model. In order to show this, we will assume that each bank-form solid (a *keiretsu* group) links with many nonfinancial firms. Every nonfinancial firm is assumed to rely for its necessary funds entirely on borrowings from the bank which is the leader of its group. Instead of regarding an individual bank or firm as an independent concern, we should assume that each group has a kind of utility function which determines the group's utility level according to the distribution of funds in it. The financial allocation in a group is assumed to be determined so as to maximize the utility subject to costs of funds given in the financial markets.¹³

¹³ The objective function for a group is assumed as follows;

$$V_k(L_{k1}, L_{k2}, \dots) - r_C M_k - r_D D_k - r_B B_k,$$

where V_k represents the group's utility which depends on a pattern of loan distribution L_{ki} , L_{ki} being the amount of loan supplied to the i th firm belonging the group. M_k , D_k , and B_k are the leader bank's borrowing in the interbank money market, deposit liabilities, and the borrowing from the Bank of Japan respectively, and the latter two are exogenously fixed. We can assume that the group determines the distribution of funds L_{ki} so as to maximize the above objective function, subject to the balance sheet constraint,

$$L_k - M_k - D_k - B_k = 0,$$

where L_k is the total amount of loans supplied by the leader bank to members of the

These assumptions make it highly probable that the relatively low level of both the official discount rate and deposit rates are of benefit not only to banks, but also to the firms which constitute the *keiretsu* groups.¹⁴ The existence of *keiretsu* groups may be important in determining the pattern of financial allocation. However, this pattern is dependent on the marginal costs of funds for each group, and manipulation of the controlled interest rate cannot change them, because, as we have already seen, the call money rate eventually moves to offset any manipulative influences. Thus, the financial allocation in each *keiretsu* group must be regarded as independent of the interest rate regulation.

It is well known that the assumption of rigidly formed groups between banks and nonfinancial firms is far from reality. A number of studies indicate that the Japanese *keiretsu* was not a very rigid group. A substantial part of the funds of financial institutions in the group was made available to the group firms. At the same time, however, the nonfinancial firms drew only a moderate portion of their external funds from the group banks. Generally speaking, they relied on sources outside the group for many of their needs.¹⁵ Some economists observe that banks have rather fiercely competed with each other to secure as many good loans as possible for themselves.¹⁶ According to one empirical study, many of the most rapidly growing firms could reduce the extent to which they relied on borrowing from their group banks, and could also have relatively flexible connections with the banks in this era of rapid economic growth.¹⁷

We cannot deny that there have been groups of large banks and nonfinancial businesses in Japan. Their existence can be explained as a means to economize transaction costs in a broad sense in the markets. Although such groups or connection to some extent reflected characteristics of the financial structure in postwar Japan, they are not necessarily unique to Japan. For example, it has been pointed out that similar ties between banks and nonfinancial firms exist in the United States.¹⁸ At any rate, our investigation shows that fixing either the official discount rate or bank deposit rates at lower levels than that of the call money rate has no obvious effect of stimulating economic growth.

C. Interest Rates on Bank Loans

Let us turn from theoretical speculation to the investigation of data with respect to loan interest rates. We cannot observe the effective rates of interest on bank loans. Table III covers only contracted interest rates on loans in Japan

group. Of course, the fund distribution in the group depends upon the shape of the utility function $V_k(L_{k1}, L_{k2}, \dots)$ which represents the *raison d'être* of the group. In the present context, it is not necessary to specify it.

¹⁴ But, this is not true for the Japanese *keiretsu* groups. According to Caves and Uekusa [5, pp. 502-4], although financial leverage did not differ significantly between group firms and other firms, the former paid on the average higher interest rates than the latter.

¹⁵ See Hadley [7, p. 160] and Goldsmith [6, pp. 194-98].

¹⁶ See Sakakibara et al. [16, pp. 25-26].

¹⁷ See Kōsai et al. [13, pp. 67-74].

¹⁸ For instance, see Werboff and Rosen [24, pp. 270-76].

TABLE III
INTERNATIONAL COMPARISON OF PRIME RATE (ANNUAL AVERAGE)

	Japan ^a	U.S. ^b	U.K. ^c	Germany ^d
1953-57	7.8(1.1)	3.7(1.0)	5.2(1.7)	8.4(-0.5)
1958-62	7.4(-1.0)	4.5(0.3)	5.2(1.4)	7.9(0.5)
1963-67	6.2(1.4)	5.2(1.1)	6.9(2.3)	8.1(0.9)
1968-72	5.7(1.3)	6.7(3.6)	7.7(5.8)	9.5(2.6)
1973-77	6.9(11.4)	8.4(10.4)	12.4(17.9)	10.4(6.2)
1978-82	6.0(5.1)	15.2(9.1)	14.6(11.4)	11.3(5.4)

Source: Bank of Japan, Statistics Department, *Nihon keizai wo chūshin tosuru kokusai hikaku tōkei* [Japan and the world: a comparison by economic and financial statistics], various issues.

Note: The parenthesis presents rates of changes in the WPI.

^a Discount rate of commercial bills eligible for rediscount by the Bank of Japan (more than ¥3 million).

^b The prime rate.

^c The interest rate on overdrafts for the prime corporations.

^d The maximum level of interest rate on overdrafts (until 1966). The interest rate on overdrafts of DM 1 million or less (from 1967).

TABLE IV
INTEREST RATES ON BANK LOANS IN JAPAN (ANNUAL AVERAGE)

	Loan Rates Covered by Formal Control: All Banks	Loan Rates Not Covered by Formal Control: All Banks	Rate of Change in WPI
1953-57	8.2	9.5	1.1
1958-62	7.6	8.9	-1.0
1963-67	7.1	8.5	1.4
1968-72	6.9	8.2	1.3
1973-77	7.7	8.8	11.4
1978-81	6.6	7.9	6.1

Sources: [3] [4].

Note: Ceilings have been imposed on interest rates of short-term (less than a year) bank loans by the Temporary Interest Rate Adjustment Law (1947). Within the legal ceilings, the short-term loan rates have been determined by a de facto cartel among the private banks. Though interest rates on other loans have been exempted from the control, they also have been determined by a type of cartel. The Japanese authorities can influence the decision making of these cartels.

and the other three major countries. According to this table, the Japanese loan rates seem to have been at rather high levels. Ranking with Germany, the Japanese prime rate was higher than those in the United States and the United Kingdom until the early 1960s. Moreover, Table IV clearly shows that the real interest rates on bank loans were much higher in the period before 1970 than after that year. Thus, it can safely be said that Japanese interest rates were relatively high in the bank loan market during the era of rapid economic growth.

In order to assess the effective costs for ultimate borrowers, we must take compensating balances (*kōsoku yokin*) into account. It is well known that Japanese banks required their borrowers to hold substantial amounts of compensating balances. Partly because of regulation of the bank loan rates, the banks tried to adjust effective loan rates by changing the ratio of compensating balances.¹⁹ The borrowers, especially medium and smaller businesses, complained of the compensating balances. Their complaint often became an object of serious public concern, because, as we have argued, they possessed a great deal of political power.

Regular investigation with respect to the compensating balances were begun by both the Ministry of Finance and the Fair Trade Commission in 1964. The results are summarized in Table V. It is difficult to obtain reliable data concerning compensating balances prior to this date.²⁰ However, it seems quite probable that the average level of the balances was not lower in the 1950s or in the early 1960s than in the period after 1964. Although there are some differences between investigations by the Ministry of Finance and the Fair Trade Commission, whichever investigation we use, the ratio of the compensating balances each bank or thrift demanded was obviously higher in the 1960s than it has been since 1970. Thus, Tables III and IV and Figure 1, which compares the movement of average loan rate with those of some interest rates, underrate the effective costs for ultimate borrowers in the era of rapid economic growth.²¹

D. Profit Rates in Banking

We have argued that in spite of rather strict regulations of some interest rates, the effective loan rates did not seem to be at markedly low levels. According to our theoretical speculation, the relatively low levels of the official discount and deposit rates did not necessarily result in remarkable benefits to borrowers in the form of low interest rates.

However, the *keiretsu* groups may have transferred the benefits to some of the ultimate borrowers. Moreover, if public authorities can regulate private banks, fund supply behavior, the regulation implies a kind of taxation on banking. Therefore, the effective control on banks' fund allocation will possibly transfer the excess profits which the relatively low levels of the "controlled interest rates"

¹⁹ We cannot blame only the regulation of loan rates for the compensating balances. In the United States, where there is no regulation of loan rates, banks usually demand from their borrowers some amount of compensating balance. There are some economic reasons why the compensating balance exists even in an economy which has no regulation of loan rates. See Rōyama [15, pp. 66-71].

²⁰ The Medium and Smaller Enterprises Agency provided some data on the compensating balances in the 1950s. Unfortunately, these data were not suitable for use in this paper because the sample size was very small, and because they presented only rough distributions of the number of borrowers according to the compensating balance ratio imposed by lenders.

²¹ Wakita [23] estimates the effective Japanese loan rates during the period of 1962-81 by making use of the data on compensating balances.

TABLE V
COMPENSATING BALANCE-LOAN RATIO (ANNUAL AVERAGE)

(A) Investigation by the Ministry of Finance: Based upon Reports Made by Private Banks (%)

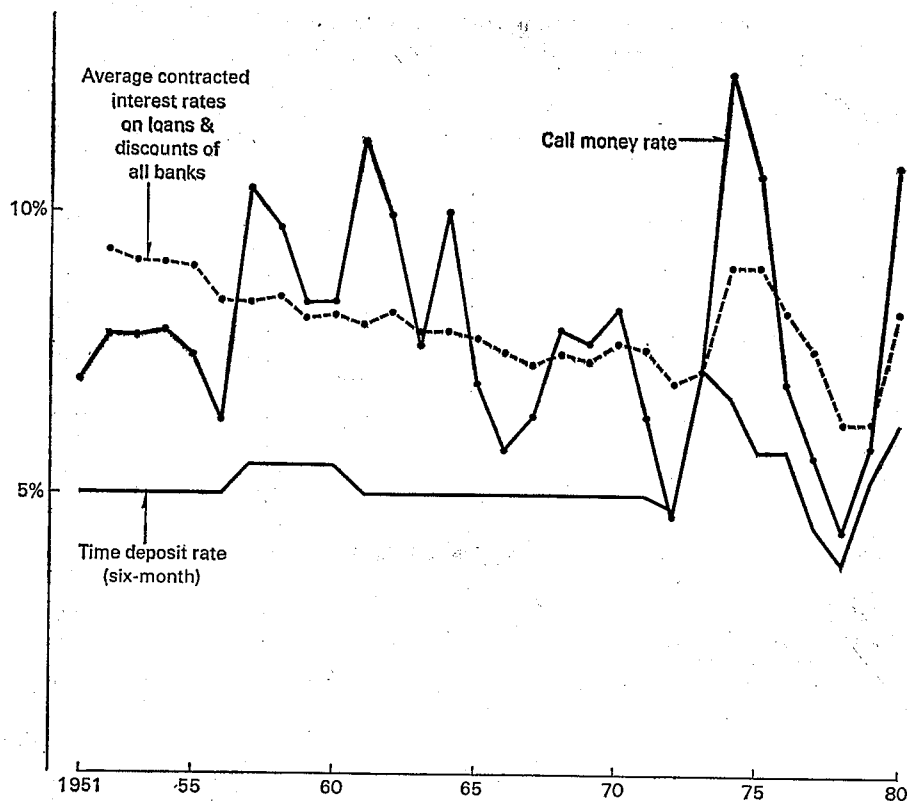
Year	City Banks	Local Banks	Mutual Loan & Savings Banks	Credit Associations
1964	11.1	21.6	40.6	41.9
1965	8.9	16.4	34.4	37.5
1966	8.2	13.6	25.5	30.5
1967	6.5	9.9	20.9	27.1
1968	5.8	9.0	19.6	25.3
1969	5.1	8.4	19.0	25.2
1970	4.1	7.5	16.5	23.4
1971	3.5	6.4	13.0	21.9
1972	3.1	5.4	8.1	17.7
1973	2.4	4.5	6.3	14.1
1974	2.0	3.9	5.6	12.9
1975	1.8	3.1	4.8	11.0
1976	1.5	2.7	4.2	9.9
1977	1.8	2.8	4.6	10.9
1978	1.8	2.6	4.4	10.4
1979	1.5	2.2	3.6	9.6
1980	1.5	1.9	3.0	8.9

(B) Investigation by the Fair Trade Commission: Based upon Questionnaires to Medium and Smaller Businesses (%)

Year	City Banks	Local Banks	Mutual Loan & Savings Banks	Credit Associations	Credit Cooperatives
1964	29.9(n.a.)	25.4(n.a.)	34.8(n.a.)	35.6(n.a.)	35.0(n.a.)
1965	20.0(33.4)	21.3(32.8)	26.1(37.3)	28.9(39.0)	27.0(34.8)
1966	12.4(22.7)	12.0(21.1)	19.4(29.0)	20.2(29.2)	19.0(26.7)
1967	10.4(22.9)	9.2(19.1)	13.0(25.0)	15.4(25.7)	11.0(21.5)
1968	10.2(25.6)	8.0(19.1)	12.8(25.0)	17.4(28.9)	16.6(24.4)
1969	9.4(23.3)	7.4(18.7)	13.5(26.8)	16.0(25.6)	19.4(25.2)
1970	8.2(22.2)	7.8(20.2)	14.6(26.2)	14.0(24.9)	20.7(30.5)
1971	7.1(22.1)	6.9(19.5)	12.8(25.1)	13.9(25.9)	14.2(21.6)
1972	6.7(21.4)	4.8(18.2)	9.5(23.7)	11.9(24.3)	15.9(25.3)
1973	4.1(19.1)	5.2(18.2)	5.0(21.3)	11.1(24.0)	15.6(22.7)
1974	3.4(18.5)	2.6(14.6)	4.1(19.8)	7.3(21.4)	13.0(26.6)
1975	3.3(19.8)	2.3(13.3)	3.4(19.7)	6.9(22.3)	10.4(24.9)
1976	2.5(18.1)	2.1(13.5)	2.6(17.9)	6.5(23.8)	11.2(31.4)
1977	2.1(14.6)	1.6(10.6)	1.7(13.3)	5.6(17.3)	12.6(22.7)
1978	2.1(14.2)	1.4(9.3)	1.2(10.9)	5.3(17.1)	14.9(25.5)
1979	1.6(12.8)	1.1(9.1)	1.2(12.0)	5.3(17.4)	12.9(22.1)
1980	1.7(11.8)	1.3(9.0)	1.3(12.1)	4.2(14.7)	6.3(15.9)

Note: The parenthesis presents a compensating balance-loan ratio in a broad sense, which includes deposits a borrower cannot draw at will.

Fig. 1. Interest Rates in Japan, 1951-80



confer upon banking to some borrowers, in particular nonfinancial firms.

In Table VI, profit rates in banking are presented along with those of primary nonfinancial corporations.²² In general, an accounting profit does not exactly correspond to a theoretical concept. Moreover, a simple direct comparison of the profit rates between banking and nonfinancial industries does not contain much useful information. Therefore, we should refrain from drawing any definite conclusions from this table. It is, however, permissible to derive the following remarks. During the rapid economic growth era, after tax profit rates tended to be higher in banking than in nonfinancial industries. While profit rates in banking have declined abruptly since the mid-1970s, nonfinancial corporations have not experienced similar sharp declines in profit rates. On the average, nonfinancial corporations seem to have obtained a little higher profits in the period after the early 1970s than in the first half of the rapid growth era. These results lend support to the conjecture that the relatively low levels of both

²² The profit rate is defined by the current net earnings—capital account ratio. The capital account includes not only equity capital but also surplus, reserves for contingencies, and other capital reserves.

TABLE VI
PROFIT RATES IN BANKING AND MAIN NONFINANCIAL CORPORATIONS
(ANNUAL AVERAGE)

Fiscal Year	All Banks	City Banks	All Industries ^a	Manufacturing
1953-57	13.6	12.0	7.6	
1958-62	12.4	10.5	9.1	10.9
1963-67	14.5	12.8	10.7	9.9
1968-72	15.8	15.8	13.8	10.7
1973-77	10.6	10.0	9.5	8.8
1978-82	8.1	8.4	9.8	9.8

Source: For all banks and city banks, Federation of Bankers Associations of Japan, *Zenkoku ginkō zaimushohyō bunseki* [Analysis of financial statements of all banks], various issues; for all industries, Bank of Japan, Statistics Department, *Shuyō-kigyō keiei bunseki* [Financial statement of main industrial corporations], various issues; for manufacturing, Japan Development Bank, *Keiei-shihyō handobukku* [Handbook of financial data of industries], various issues.

Note: Profit rates are after tax current profits per capital account.

^a Excludes financial and insurance firms.

deposit rates and the official discount rate may have provided economic rents to the private banks during the rapid growth era.²³

E. *The Bank of Japan Loans and "Easy Money Policy"*

During the rapid economic growth era of 1953-72, Bank of Japan loans to private banks accounted for approximately 40 per cent of the Bank of Japan's total assets, 45 per cent of monetary base, and 7 per cent of the total liabilities of the city banks, the primary borrowers from the Bank of Japan. In this connection, the Federal Reserve Bank loans to the U.S. domestic banks were only 0.3 per cent of monetary base, and 0.06 per cent of the U.S. commercial banks' total liabilities in the same period. These figures indicate the overwhelming importance of the Bank of Japan loans to private banks at that time. This situation, i.e., the situation in which private banks actively increase their loans to nonfinancial borrowers by heavily relying on borrowings from the Bank of Japan, used to be called the "overloan." Some have strongly argued that the

²³ We should point out the possibility that the accounting profits of the banks were under-rated because the taxation system of allowances and reserves. In the era of rapid economic growth, especially in the first half of the era, there were many "administrative guidances" concerning the banks' accumulation of reserves. For example, banks were forced to accumulate a default reserve fund of the maximum amount permitted by the taxation system. Since the accumulation was regarded as one of current expenses, the more reserves they accumulated, the lower net earning became. In the 1960s, owing to administrative guidance, the annual amount of the default reserve accumulation is estimated to have been on the average slightly more than the current net earnings. That amount has dropped to one-tenth of the current net earnings since the mid-1970s. For an inter-industry comparison, see Komiya [12] and Ikemoto et al. [9].

Japanese policymakers utilized the "overloan" quite skillfully as a lever to intervene in financial allocation for the purpose of promoting economic growth, and some have argued that the "overloan" represented the Bank of Japan's "passive" stance or its easy money policy in the high-growth era.²⁴ In this section, we shall critically investigate these arguments.

In his provocative book, Professor Zysman claims that monetary authorities could effectively influence private banks' lending by using the "overloan" as a lever, consequently achieving the financial allocation suitable for rapid economic growth. He cites the following argument given by the U.S. Government Accounting Office:

In a decision taken in the early postwar years, the Japanese government, as a stimulant to the economy, has chosen to keep interest rates below what for most of the period constituted market-clearing levels. This has meant that in most years more funds have been sought than are available to loan. Accordingly, capital investment funds have had in effect to be allocated with priority given to firms in "key" industries.

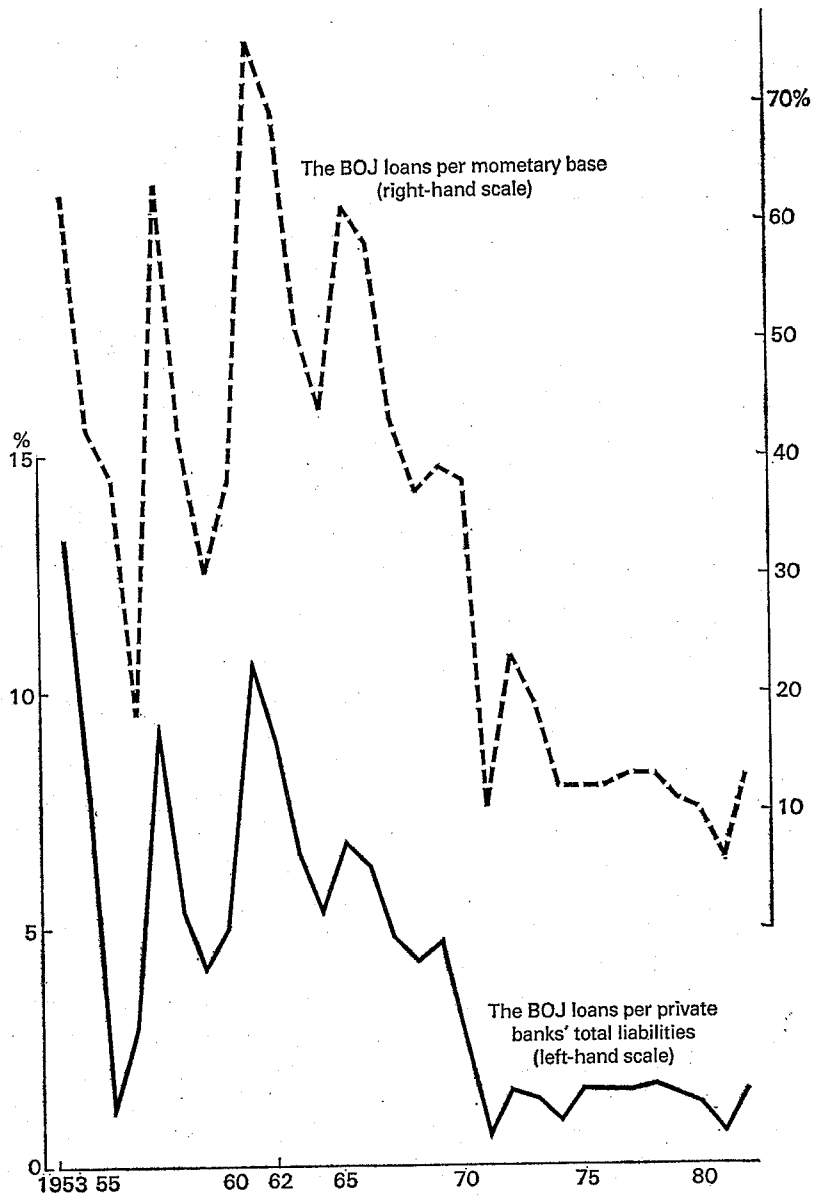
How has the Japanese government been able to direct lending practices of private banks? It has been able to do so quite easily because during most of the period of high growth, there were such pressures on the commercial banks for funds that they loaned in excess of their stipulated ratio and had to borrow from the Bank of Japan to cover commitments. Japan's central bank is not an independent central bank, but one which follows Ministry of Finance policy. Therefore, the condition imposed for provision of the extra funds which the commercial banks were frequently seeking, was that the loan policy of the commercial banks be in accordance with government priorities. [26, p. 249]

We cannot deny the possibility that the "overloan" made the Bank of Japan more influential in the money markets than it would have been in the absence of the "overloan." However, it seems quite doubtful whether the policymakers utilized the "overloan" with the intention of promoting economic growth, because the monetary authorities introduced a measure to extinguish the "overloan" at the beginning of the 1960s when Japan was just in the process of the National Income Doubling Plan. The measure was the "new system of monetary control" (*shin-kinyū chōsetsu hōshiki*) of 1962. According to the "new system," the Bank of Japan was supposed to purchase and sell public bonds more frequently than before in order to reduce the importance of its loans. If the policymakers had effectively utilized the "overloan" to control private banks' lending behavior, why did they try to wipe out such a useful procedure at this crucial time?

The policymakers, above all the Bank of Japan, did not regard the "overloan" as favorable to them. They thought that it made Japanese financial markets unstable and hindered efficient management of monetary policy. Until the latter half of the 1960s, the "overloan" had been almost inevitable because there existed no means of flexibly adjusting the monetary base other than Bank of Japan loans

²⁴ See, for example, Teranishi [20, p. 108] and Goldsmith [6, pp. 138-41].

Fig. 2. Bank of Japan Loans, 1953-82



to private banks. Therefore, the above judgment made by the policymakers seems to have been misdirected. Moreover, Figure 2 obviously shows that the new system of monetary control did not succeed in reducing the extent to which private banks relied on borrowings from the Bank of Japan. At any rate, however, this new system can be counterevidence against the argument that Japanese

policymakers intentionally utilized the "overloan" as a lever to promote economic growth.

Let us proceed to an investigation of whether the Bank of Japan's monetary policy was characterized by a "passive" stance, or by easy money. As we have already argued, the "overloan" merely reflected the financial structure at that time, and is not a proof that the monetary policy was passive. If the Bank of Japan had "passively" accommodated increases in the demand of the nonfinancial sectors associated with economic growth, the call money rate would have always been at a level close to that of the official discount rate. In reality, as Figure 1 has shown, the former was almost always significantly higher than the latter during the 1950s and 1960s.

Steep increases in call money rates frequently became one of the nagging concerns for policymakers in the Ministry of Finance and the Ministry of International Trade and Industry. These ministries often called on private banks to make coordinated efforts to pull the call rate down. Many economists also regarded the call rate as "abnormally high," and claimed that it resulted from distortions in Japanese financial markets. Since the high level of the call money rate was a phenomenon having its origin in the strong demand for funds, this judgment was obviously misdirected. In any event, it seems evident that the Ministry of Finance did not consider the monetary policy at that time to be either "passive" or one of easy money.

The Bank of Japan was chronically worried about the balance of payments in the era of rapid economic growth, especially before the mid-1960s. Under the fixed exchange rate regime of the time, the bank had to take care that scarce foreign exchange reserves were not exhausted by too rapid an economic expansion. This concern was a critical brake on an easy money policy. This braking effect seems to have been of benefit to the Japanese economy, because it contributed to stabilizing domestic price levels. From 1953 to 1971, the annual average rates of increase in the WPI and the CPI were only 0.7 per cent and 4.2 per cent respectively. This was a remarkable achievement in view of the high rate of economic growth.

This situation in the era of rapid economic growth was in sharp contrast to the period immediately after World War II, when policymakers were actively applying a true easy money policy. The Reconstruction Finance Bank (RFB) (Fukkō Kinyū Kinko) symbolized this policy. The RFB, established at the beginning of 1947, was given the role of supplying funds to industries to which policymakers gave priority. It financed itself partly through treasury funds, but mostly by selling RFB debentures to the Bank of Japan directly or indirectly.²⁵

According to Table VII, from 1947 to 1952 when the Reconstruction Finance Bank was abolished, the money supply expanded at approximately 50 per cent annually. During the same period, the annual average rate of increase in real GNP and the price level (consumers' price index) were 11.2 per cent and 37.9

²⁵ See Shimura [18, pp. 40-43] and Goldsmith [6, pp. 140-41].

TABLE VII
AVERAGE RATES OF INCREASE IN MONEY SUPPLY, REAL GNP,
AND PRICE LEVELS (ANNUAL RATE)

	Money Supply		Real GNP	WPI	CPI
	M1	M2			
1947-52	46.9 ^a	50.2 ^a	11.2	80.6	37.9
1953-57	10.0	17.3	7.4	1.1	3.1
1958-62	18.3	20.1	10.1	-1.0	3.6
1963-67	17.1	17.8	10.2	1.4	5.4
1968-72	21.0	19.8	9.7	1.3	5.8
1973-80	9.3	12.1	4.2	10.0	10.1

Sources: [3] [4]; Japan, Economic Planning Agency, *Kokumin shotoku tōkei nenpō* [Annual report on national income statistics], various issues; Japan, Economic Planning Agency, *Kokumin keizai keisan nenpō* [Annual report on national accounts], various issues.

^a Estimates by the Bank of Japan cited in R. W. Goldsmith [6, p. 136].

per cent respectively. These figures indicate that handsome, real economic growth was achieved under this radical easy money policy. The period, however, was obviously exceptional. The monetary authorities abandoned the easy money policy in the early 1950s, partly because of the pressures produced by the Dodge-Shoup fiscal reforms.

In summary, in view of the relatively high level of the call money rate, we cannot conclude that the Bank of Japan pursued an easy money policy in the era of rapid economic growth. Because of constraints with respect to the balance of payments, the Bank of Japan could assume a "passive" stance for only very short periods, if at all. It would be more appropriate to say that the Bank of Japan contributed to Japanese economic growth by restricting money supply, rather than passively accommodating market demand for financing. To have chosen the latter course would surely have led to destructive inflation.

III. CONCLUDING REMARKS

The arguments presented in this paper can be summarized as follows. The Japanese interest rates were at substantially high levels during the 1950s and 1960s not only in real terms but also in nominal terms. This was due to the strong demand for funds during the period. The policy stance taken by the Bank of Japan was not "passive," i.e., the bank did not simply accommodate credit demand. If the bank had taken a passive approach, it would have led to galloping inflation, which surely would have hindered economic growth.

On the other hand, it should be recognized that some of regulated interest rates, especially deposit rates and the official discount rate, were almost always substantially lower than the call money rate which was freely determined in the interbank money market. This means that private banks could obtain some

subsidy transferred from their depositors and the Bank of Japan (or general tax payers). It is, however, not certain whether the subsidy contributed to industrial development. The theoretical speculation in this paper denies the possibility.

It has been a popular view that the Japanese low interest rate policy worked successfully in promoting economic growth. This paper, though in a tentative way, throws doubt upon the view. We need more thoroughgoing reconsideration with respect to the low interest rate policy in postwar Japan.

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APPENDIX

A MODEL OF "LOW INTEREST RATE POLICY"

In this appendix, we shall formally explain the relationship between economic growth and the manipulation of "controlled" interest rates. This corresponds with the explanation given in Section II.B. The basic assumptions of the model have been articulated there. Therefore, we shall avoid a repetition in the following.

The households' allocation of assets is described by a Tobin-type portfolio model [22].

$$C = f^C(\bar{r}_D, r_E, y)W; f^C_1 < 0, f^C_2 < 0, f^C_3 > 0, \quad (1)$$

$$D = f^D(\bar{r}_D, r_E, y)W; f^D_1 > 0, f^D_2 < 0, f^D_3 ? , \quad (2)$$

$$E = f^E(\bar{r}_D, r_E, y)W; f^E_1 < 0, f^E_2 > 0, f^E_3 ? , \quad (3)$$

where C , D , and E respectively stand for cash, bank deposits, and stock demand, and \bar{r}_D , r_E , and y are respectively the deposit rate exogenously fixed, the stock yield, and the national product. A f^i_j indicates a partial derivative of the function f^i with respect to its j th argument. Of course, the usual adding up conditions are applied to these demand functions; i.e.,

$$f^C_j + f^D_j + f^E_j = 0, \quad f^C + f^D + f^E = 1. \quad (4)$$

The total households' wealth W is defined as the sum of their initial wealth W_{-1} and the savings during the current period;^a

$$W = S + W_{-1}. \quad (5)$$

^a In the following, we shall neglect the wealth effect accompanied by changes in the stock yield r_E .

The households' savings S is represented by the following equation (6);

$$S = S(r_D, r_E, y, W_{-1}); S_1 ?, S_2 ?, S_3 > 0. \quad (6)$$

The banks hold reserves R which is equal to a fixed proportion of their deposit liabilities D ;

$$R = kD. \quad (7)$$

They allocate the remainder of their assets over the call loan and loans to the firms, depending on call money rate r_C , loan rate r_L , and possibly the controlled interest rates, i.e., \bar{r}_D , and the official discount rate \bar{r}_B , so their supply of loans L (in stock terms) is represented by

$$L = L(r_C, \bar{r}_L, \bar{r}_D, \bar{r}_B); L_1 < 0, L_2 > 0, L_3 < 0, L_4 < 0, \quad (8)$$

where the loan rate \bar{r}_L is assumed to be exogenously fixed.

By assumption, the banks' balance sheet can be represented by the following equation (9);

$$R + L + CL = D + B, \quad (9)$$

where CL is their net position in the call money market, and B is borrowing from the Bank of Japan. From equations (7), (8), and (9), we can derive the banks' demand for the call loans as follows;

$$CL = (1 - k)D - L(r_C, \bar{r}_L, \bar{r}_D, \bar{r}_B) + B_w^1. \quad (10)$$

Finally, the firms take any loan the banks are willing to make, and the remainder of their credit needs is met by issuing stock. Therefore, if the firms' investment function is assumed as

$$I = I(r_E, \bar{r}_L); I_1 < 0, I_2 < 0, \quad (11)$$

then their supply of the stock can be represented by equation (12);

$$E_s = I(r_E, \bar{r}_L) - [L(r_C, \bar{r}_L, \bar{r}_D, \bar{r}_B) - L_{-1}] + E_{-1}, \quad (12)$$

where $(E_s - E_{-1})$ indicates the firms' demand for funds in the stock market.

We must explicitly consider four markets; i.e., those of the monetary base, the call loans, the stocks, and the real commodity. Their equilibrium conditions are respectively represented by the following equations:

$$C + R = B, \quad (13)$$

$$CL = 0, \quad (14)$$

$$E_s = E, \quad (15)$$

$$I = S. \quad (16)$$

The Walras' Law reduces the number of independent equilibrium conditions to three. By assumption, the Bank of Japan adjusts the supply of the monetary base so as to preserve the full employment level of national product y_F . Then, we obtain equilibrium levels of three endogenous variables r_C , r_E , and B from the three independent conditions.^b

^b When the supply of monetary base B is assumed to be fixed exogenously, the national product y becomes an endogenous variable. In this case, we can derive the effect of changes in the deposit rate \bar{r}_D on y . If both s_1 and s_2 are negligible,

Under these conditions, we can easily derive the effect of alteration in the deposit rate \bar{r}_D on the firms' investment I ;

$$dI/d\bar{r}_D = I_1 S_1 / (I_1 - S_2). \tag{17}$$

Therefore, if households' savings is insensitive to changes in the interest rates, i.e., $S_1 = S_2 = 0$, then $dI/d\bar{r}_D = 0$; that is, the firms' investment level at full employment will not be changed by alteration in the regulated level of deposit rate \bar{r}_D . If both S_1 and S_2 are positive, i.e., if the households' saving shows a positive response to the interest rate changes, then $dI/d\bar{r}_D > 0$. In this case, investment at full employment will be decreased by lowering the deposit rate. These results are obviously independent of how the changes in the deposit rate \bar{r}_D influence households' asset demands.

We can easily derive the effect of changes in the deposit rate on the call money rate r_C when both S_1 and S_2 are negligible. In this case,

$$dr_C/d\bar{r}_D = [(f^C_1 + f^D_1)W - L_3] / L_1 < 0. \tag{18}$$

This implies that at full employment the call money rate will be pushed up by lowering the deposit rate.

Quite similarly, we can obtain results with respect to manipulation of the official discount rate \bar{r}_B , and loan rate \bar{r}_L . They are explained in the text briefly, but will be omitted here for the sake of economy.

$$\begin{aligned} dy/d\bar{r}_D &= (kf^D_1 + f^C_1)I_1 / -(kf^D + f^C)I_1 S_3 - (kf^D_2 + f^C_2)S_3 - (kf^D_3 + f^C_3)I_1 \\ &= -[(1-k)f^D_1 + f^E_1]I_1 / -(kf^D + f^C)I_1 S_3 - (kf^D_2 + f^C_2)S_3 - (kf^D_3 + f^C_3)I_1. \end{aligned}$$

Since the denominator is positive and I_1 is negative,

$$\text{sign}(dy/d\bar{r}_D) = \text{sign}[(1-k)f^D_1 + f^E_1].$$

Therefore, if $(1-k)f^D_1 + f^E_1 < 0$, i.e., if public demand for the stocks is rather strongly influenced by changes in the deposit rate, pulling \bar{r}_D down will expand the national product y . This result corresponds with what Wijnbergen [25] has emphasized.