

**The Economic Consequences of the ‘Price Keeping Operation’
in the Japanese Stock Markets^(*)
- From August 1992 to November 1993-**

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Abstract

When the Nikkei Stock Average occasionally dropped below ¥17,000, a fear spread over the markets that the low level of stock prices would trigger off financial instability in Japan. It is told that some programs, the so-called "Price Keeping Operation (PKO)", were conducted by the Japanese government to sustain stock prices above a certain level in the early 1990s. The government put restrictions on selling stocks, bought stocks with public funds by itself, and/or froze and passed up the release of the state-owned shares. The purpose of this paper is to analyze the structure of the policy and its economic consequences, which was applied from August 1992 to November 1993.

With the sharp decline of the Nikkei Index below ¥17,000, the Japanese government stimulated the trust banks and the other financial institutions, which it had cosigned, to buy more stocks with the aim of supporting the stock markets. The trust banks and the asset management companies did buy stocks in the spot market, under the guidance of the Japanese government. However, at the same time, some of them hedged by selling stocks in the futures market on the expectation that stock prices would decline furthermore. As a result of this, the prices of the futures market and the spot market synchronously crashed. PKO could not accomplish its purpose in the end.

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1. Introduction

When the Nikkei Stock Average (Nikkei 225 Index) occasionally dropped below ¥17,000¹ in the early 1990s, a fear spread over the markets that the low level of stock prices would trigger financial instability in Japan. It is told that some programs, such as the so-called “Price Keeping Operation (PKO)”, were conducted by the Japanese government to sustain stock prices above a certain level. The government put restrictions on selling stocks, bought stocks with public funds by itself, and/or froze and passed up the release of the state-owned shares. The purpose of this paper is to analyze the structure of the policy and its economic consequences, which was applied from August 1992 to November 1993.²

It may be useful to give a short comment here about the term, “*Price Keeping Operation (PKO)*.” It is believed that this term first appeared in *The Nikkei Financial Daily* on November 19, 1992. In those days, there were a lot of pros and cons to the bill on Japan’s involvement in the United Nations’ PKO (peacekeeping operations) activities. So the word, “PKO”, was popular in Japan at that time. Probably *The Nikkei Financial Daily* coined this term as a parody for the name of the government’s policy to sustain stock prices at a particular level.³

¹ In 1992, a level of ¥17,000 at the Nikkei Stock Average was considered to be a “critical point” for the financial stability by the market players and the policymakers. See in detail in section 2-2.

As of November 14, 2002, almost ten years after those days when the PKO programs were first applied in Japan, the Nikkei Stock Average was ¥8,303. This was about 50% of the targeted level of stock prices in the period of PKO in the early 1990s.

² The PKO policy that consisted of three measures was concentrated in this period. See in detail in section 2-2.

³ This was not the first case in Japan where the government tried to rig the stock markets by itself. Nihon Kyodo Shoken was established in order to sustain the stock prices in 1964, a year earlier than “the Security Depression.” Then, Nihon Shoken Hoyu-Kumiai was established in 1965. The former was a limited company supported by banks, and the Ministry of Finance (MOF) helped its establishment. The later was a non-profit association, supported by security companies, and the Bank of Japan (BOJ) backed up its establishment. See in detail, Kobayashi (1994).

Table 1 shows the major events concerning the PKO programs. As Table 1 illustrates, many policy prescriptions were conducted from 1992 to 1993. It seems that only a few researchers have so far caught on to this topic. No research can be found in *White Papers* of the Economic Planning Agency, *Annual Reports* of the Bank of Japan, or the Tokyo Stock Exchange. One of the reasons why these institutions have provided no research on PKO may be that no related data was available to the public. The other reason is that perhaps these organizations would not like to officially admit the manipulation of the market by the government in Japan. So, there are no official verifications on PKO published by these organizations. Only several researchers such as Kosai (1994) have so far made some comments on this topic.

In this paper, the brief history and the purpose of PKO will be discussed in Section 2. Also, the components of PKO⁴ will be investigated: the restrictions on selling stocks (in section

The similar stock price stabilizing policies to PKO might have been taken place in other Asian countries such as South Korea, Taiwan, and China, too, in the 1990s. In South Korea, the Korean government set up a relief fund to stabilize the stock market, with confronting the sharp decline of stock prices in 1990. But the fund was dissolved in 1996, when Korea was about to become a member of the OECD, because it might be considered unfair for overseas investors to manipulate the market (*The Nihon Keizai Shimbun*, April 20, 1996). At the first direct Presidential election in Taiwan in 1996, Mainland China held military missile maneuvers in the sea off Taiwan for threat. As a result of this, the Taiwan stock market sharply went down. With the sharp decline of the stock prices, the Taiwan government studied the PKO schemes. In China, a foundation was established with the aim of sustaining the stock prices in 1994 (*The Nihon Keizai Shimbun*, February 1, 1994). And it is also believed that the Chinese government ran similar measures to PKO to keep the Hong Kong stock market, at Hong Kong's handover to China in 1997. (Above examples in Asian countries were pointed out by Makoto Sakurai.) These facts indicate that the policymakers in some Asian countries believed their abilities to artificially control the stock price levels in any way. These PKO policies in the Asian countries are remaining research topics.

⁴A stock price fluctuates according to many factors, which have an effect on the expected income flow of a firm. So stock prices are affected by the macro economic policies, especially monetary policy including "daily operations" of the Bank of Japan (BOJ). It can be considered that BOJ conducted the monetary policy (as well as "daily operations"), taking stock prices into account, in the early 1990s. But only the policies to directly influence the stock markets will be investigated in this paper. The monetary policy will be one of the remaining research topics, if it was conducted with the aim of sustaining stock prices. The danger of the targeting asset prices by

3), buying stocks by using public funds (in section 4), and freezing and passing up the release of state-owned shares (in section 5). The Ministry of Posts and Telecommunications (MPT)⁵ put asset management for some of postal savings and postal insurance in the hands of some trust banks, through the Postal Life Insurance Welfare Corporation (PLIWC, Kan-i-Hoken Fukushi Jigyodan), which was an affiliated organization of MPT. And similarly, the Ministry of Health and Welfare (MHW) consigned some trust banks, life insurance companies and asset management firms to invest some of welfare pensions and national pensions, through the Pension Welfare Service Public Corporation (PWSPC, Nenkin Fukushi Jigyodan), which was an affiliated organization of MHW. With the sharp decline of the Nikkei Index below ¥17,000, the two ministries (MPT and MHW) stimulated the trust banks and the other financial institutions, which they had cosigned, to buy more stocks with the aim of supporting the stock markets along with the Ministry of Finance (MOF). However, it was natural for the trust banks and the asset management companies to buy stocks at lower prices and then sell them at higher levels, in order to maximize the rate of return of investments. The trust banks and the asset management companies did buy stocks in the spot market, under the guidance of MPT and MHW. This also means that they followed the invisible administrative pressure of their competent authority, MOF, which lay behind the two ministries. However, at the same time, some of them hedged by selling stocks in the futures market on the expectation that stock prices would decline further. As a result of this, the prices of the futures market and the spot market synchronously crashed. In the end, PKO could not accomplish its purpose.

In the final section, the limits and problems of the PKO policies will be indicated. And this paper will finally conclude with referring to the remaining research topics (Section 6). In the Appendix, it will be discussed what the policymakers considered as the main factors to

central bank is shown in Mishkin (2001b).

⁵ The government ministries and agencies were reorganized in January 2001. MPT mentioned in this paper refers to the former ministry, but not the current one. MHW and MOF also refer to the former ones.

determine the stock price in those days.

2. Overview of PKO

2-1. Brief History of PKO

In the early 1990s, asset prices, especially stock prices and land prices, sharply declined in Japan.⁶

(1) Declining Stock Prices under Stimulus Macroeconomic Policy

In 1992, it became clear for everyone that the Japanese economy was slowing down into a recession. Stock adjustment in investment of plant and equipment and/or in housing occurred. In addition, consumer expenditure was becoming stagnant. Under these economic conditions, the Nikkei Stock Average dropped below the ¥20,000 mark, in the middle of March 1992, for the first time in the past five years and one month. Historically, the Nikkei Stock Average hit its peak, ¥38,915 in December 1989.

On March 31, the government made the “Emergency Economic Package,” when the budget for the fiscal year 1992 was under deliberation in the Diet. It was the first economic package since 1987. This package consisted of seven action plans, including an advance of public-works expenditures in the first half of the fiscal year. In spite of the announcement of this package, the Nikkei Stock Average declined to a level of ¥19,457, which was half of its peak in 1989. On April 1, Bank of Japan (BOJ) reduced the official discount rate by 0.75% to 3.75%. Despite this mix in policy, the Nikkei Stock Average of April 2 dropped below ¥19,000.

⁶The Japanese economy in the late 1990s has two following characteristics. The first one is that the growth rate of the real GDP is greater than that of the nominal GDP, and the second one is that asset prices, especially stock prices and land prices, declined. These two characteristics are closely related to each other. The fact of the higher growth rate in real term rather than in nominal one indicates that the Japanese economy in the late 1990s was in deflation. In this economic condition, the decline of the asset prices is consistent with deflation, because the asset prices are considered to be present value of the future nominal income flow.

On April 9, one week later, the stock index dropped below ¥17,000. BOJ cut the official discount rate again on July 27, but the Nikkei Stock Average continued to decrease sharply and reached ¥14,309 on August 18.

(2) The First Stage of PKO: Completion of PKO and After

The Japanese government initially scheduled the “Comprehensive Economic Stimulus Measure” to be conducted at the end of August, and measures for the stock prices would be included in the package. But the Nikkei Stock Average dropped below ¥14,000 on August 18. As these things came to pass, the government was forced to bring forward the date of the initial plan. MOF announced the “Administration for Financial Operation for Our Immediate Needs” in order to restrict selling stocks (see Table 2). The “Comprehensive Economic Stimulus Measure,” for which project value was ¥10.7 trillion, was announced on August 28, including the “Market Activate Plan.” It consisted of two plans (see Table 2); the first one was to buy stocks with public funds of social security, annuity funds, and/or postal savings and postal insurance funds. The second plan was to freeze and pass up the release of the government holding stocks. Thus, the framework of PKO was completely formed: restriction on selling stocks, buying stocks with government funds, and freezing and passing up the release of the state-owned stocks.

During the period between the end of August and the beginning of September, restrictions on selling stocks had actually taken place among the three PKO plans, as shown in detail in Section 2-2. There were two ways to impose restrictions on selling stocks. One of them was “moral suasion,” which was called “*intervention by lips*” in the market. And the other was “changes of the accounting standards.” Due to these treatments, stock prices started to rebound after August 19, and then the Nikkei Stock Average recovered to a level of ¥18,900 on September 10. The average volume of daily stock trading recovered to 520 million units (*The Nikkei Financial Daily*, March 29, 1993). However, since then, stock prices began to gradually

decline again. At this point, the public came to raise questions about the effect of PKO.

(3) The Second Stage of PKO: Using Public Funds

The stock market continued the downward drift, and the Nikkei Stock Average dropped below ¥16,000 again on November 17. Against that background, the government changed its timid attitude to take the second way of the PKO programs – to buy up stocks with public funds. This was conducted on November 18 and the PKO policy entered into the second stage. It was estimated in the market that about 10 million stocks were purchased with public funds on that day (*The Nikkei Financial Daily*, November 19, 1992). This might have been the first time for the term of “PKO” to be used for “Price Keeping Operation.” With this PKO, the stock market became stable for a short time. However, at the end of December, the stock market started to show stagnation again. The average of the daily trading volume was 257 million stocks from November 18 to December 22, 1992. So, the effect of the PKO was thrown into doubt again.

During this period, the stock market was in a continued stalemate within some range around ¥16,000, and kept a stagnant trading turnover of about 2 hundred million stocks each day (see Figure 1-1 and Figure 1-2). It was regarded that the primary function of the capital markets to provide liquidity to the firms, was disturbed by PKO.

With no change in the market, a new year of 1993 came. However, the mood in the market began to rapidly change after the end of January. In the market, there was a whispered view, called the ‘February Crisis’, that the stock market would crash in February, when the maturity dates of a lot of “specified money trust” and “fund trust” would concentrate.⁷ Even if this “crisis” would not occur, market players considered that PKO would be changed into PLO: Price Lifting Operation. In other words, the market participants thought that the government had a strong intention to lift the stock price level up to a particular level, rather than to sustain it

⁷ On “specified money trust” and “fund trust,” see in detail Shikano (2001), p.328.

at a certain level. In fact, it was done to buy up stocks with public funds on January 21, and the stock market rebounded. It was estimated that the public funds accounted for over 10% of the one-day trading turnover in the Tokyo Stock Exchange First Section (*The Nihon Keizai Shimbun*, January 31, 1993). It was considered that, as a result of this buying support with public funds, the Nikkei Stock Average managed to avoid dropping below ¥16,500 on January 21. Similarly, public funds were funneled into the stock market on January 26, too. The market players thought that these support operations prevented the Nikkei Stock Average from sinking below ¥16,000, and the stock market recovered to ¥17,000 on January 28 (*The Nihon Keizai Shimbun*, January 31, 1993). Under those circumstances, BOJ decided to reduce the official discount rate from 3.25% to 2.50% on February 4, 1993. It can be assumed that the official discount rate cut obviously was done with consideration of the stock prices. As a result of this, the Nikkei Stock Average recovered to the ¥17,000 mark from January 26 to February 5, 1993. But the stock trading remained at a low level and the average daily turnover was just 271 million stocks (*The Nikkei Financial Daily*, March 29, 1993).

(4) *The Third Stage: Inflow of Foreign Capital*

After the middle of February, the yen sharply appreciated⁸ The higher yen stimulated foreign investors to buy Japanese securities (*The Nikkei Financial Daily*, March 29, 1993). On March 8, the former vice president of Liberal Democratic Party (LDP), Kanamaru, was arrested for tax evasion, which was related to a political donation from Sagawa Express Co. Ltd. With anxiety that the arrest of the former vice president might trigger a crash of the stock markets, the government directed PKO (*The Nikkei Financial Daily*, March 29, 1993).

⁸The sharp appreciation of the yen at this time can be explained as follows. The official discount rate decreased to 2.5%. As a result of this, many market players came to expect that there would be no further decline of the interest rate in Japan. On the other hand, in the United States, the real interest rate declined at that time. In this circumstance, the yen appreciated and the dollar depreciated.

Then the Nikkei Stock Average, which had been fluctuating around ¥16,000 in the past six months, began jumping upward in the second week of March, near to the ¥19,000 mark at a dash. The average volume of one-day trading between March 5 and March 22 reached 580 million stocks. It was very desirable not only for the banks, which had to care about the fulfillment of the BIS capital requirement, but also for the policymakers, who were concerned about financial instability, that the stock index exceeds the ¥19,000 mark at the end of March (financial year ended on March 31 for most companies). At this time, although it was not clear which of PKO or strong yen contributed to the bull market, PKO was temporarily highly appreciated.

(5) Aftermath

Foreign money continued coming into Japan after April 1993. Buying by foreign investors propelled the stock markets upward. In those circumstances, the PKO fund from postal insurance was redeemed by the Ministry of Posts and Telecommunications at the end of July 1993 (see Section 4). East Japan Railways Company (JR East) was listed on October 29 (see Section 5). The Nikkei Stock Average started decreasing shortly after; dropping below ¥20,000 on the following day, ¥19,000 on November 4, and ¥16,000 on November 29.

Thereafter, when the Nikkei Stock Average dropped below ¥17,000 in the early 1990s, it was occasionally considered that PKO was applied or might have been applied.

2-2. The Definition and Purpose of PKO in This Paper

(1) Definition

It is of use here to mention the definition of PKO in this paper. The Japanese government officially announced the necessity of the policy to prop-up the stock prices to a certain level in the “Administration for Financial Operation for Our Immediate Needs” on August 18, 1992 and in the “Market Activate Plan” which was incorporated in the Comprehensive Economic

Stimulus Measure on August 28, 1992. However, as mentioned before, the term “PKO” was used only by market players and newspaper or other medias, but not by the government officials.

PKO, which started in August 1992, consisted of three programs (see Table 2): 1) restricting on selling stocks, 2) buying stocks with public funds such as social security and annuity fund, and/or postal savings and postal life insurance fund, 3) freezing and passing up the release of stocks government held. There are various interpretations as a definition of PKO. One of them is a combination of all three programs and can be called “PKO in a narrow sense.” On the other hand, “PKO in a broad sense” is, for instance, to consist of Program 1), 2) or 3).⁹ However, in this paper, only the narrow PKO (the combination of three programs) is strictly defined as “PKO” and investigated.

Since the Ministry of Finance (MOF) has officially denied having conducted PKO in Japan in the past years, there is a diversity of views on PKO: when it first started, when it finally finished, and whether it really ended or still continues (*The Nihon Keizai Shimbun*, February 1, 1993; January 30, 1995). As far as it is concerned in a narrow sense, the author considers that PKO started in August 1992 and practically finished at the end of November 1993. Therefore, in this paper, the term of “PKO” means just the price-keeping operations taken during the period between August 1992 and November 1993. If PKO in the narrow sense can be studied carefully, economic consequences of PKO in a broad sense will also be easily understood.

⁹ From the definition of “PKO in a broad sense,” it can be said that the broad PKO has been still working since 1986 when MHW was permitted to invest public funds through PWSPC, and since 1987 when MPT were permitted to invest public funds through PLIWC. The difference between this “investment trough each PLIWC and PWSPC” and “broad PKO: buying stocks with public funds” can be distinguished with the point of view of “agency-principal” problem. This will be shown in Section 4.3.

(2) The Purpose of PKO

In 1992, a level of ¥17,000 at the Nikkei Stock Average was considered by the market players and the policymakers to be a “critical point” for financial stability. People were concerned, if the Nikkei Stock Average dropped below the critical point, it would trigger financial instability, as shown in Table 3.¹⁰ There was a view that the PKO programs were necessary for Japanese banks to clear the BIS requirements. This view also concluded that it was crucial for Japan to keep financial stability during that time. Under these circumstances, the government came to bring the PKO programs into force.

At that time, there was an expectation among the policymakers (though there was no clear evidence) that the Japanese economy would recover within following half year while the stock market was supported by PKO (*The Nihon Keizai Shimbun*, March 24, 1995). It is considered that this view encouraged the government to take the PKO programs. It implicitly indicates that there was an idea among the policymakers that it could be acceptable to manipulate the stock markets as an emergency evacuation plan.

In the following sections, the precise structure of the components of PKO and their effects will be investigated in detail.

3. Measures 1: Restricting on Selling Stocks

The first action program of PKO is putting restrictions on selling stocks.¹¹ There are two ways to carry out this measure. One of them is “changes in the accounting systems.” The other is “moral suasion,” which was called “*intervention by lips*” in the market.

¹⁰ The general descriptions of the financial instability caused by the decline of stock prices are shown in Mishkin (2002a), pp.200-205, and 225-228.

¹¹ According to the Discounted Dividend Model (DDM), these measures have nothing to do with the stock prices; however, Stigler’s model indicates that these measures shift the supply curve to the left.

3-1. Changes in the Accounting Systems

The first way to restrict the selling of stocks was to make changes in the accounting systems. When the Nikkei Stock Average dropped into the ¥14,000 mark in August 1992, the main concern for the Ministry of Finance (MOF) was the financial institutions' movement to sell the stocks in order to get capital gains. The following month, September, would be a semi-annual settlement month for most banks and insurance companies. These companies needed capital gain to show good financial performance on their income statements. This institutional selling of shares would create a further decline in the stock markets. MOF was worried about the so-called "fallacy of composition" in the stock markets. Against that background, MOF announced the "Administration for Financial Operation for Our Immediate Needs" (see Table 4) in a hurry on August 18 1992, just one day after the market crash. This announcement allowed the companies not to reveal their capital loss on their income statements at their semi-annual settlements. In more concrete terms, MOF lifted up a ceiling on dividend payout ratio (maximum percentage of dividend to income after tax) for the banks.¹² Since the stock markets were still stagnant in January 1993, MOF also permitted the insurance companies to post capital gain without selling their stocks. As these examples showed, MOF tried to prevent the stock markets from falling, by changing the accounting standards for the banks and the insurance companies after August 1992 and January 1993 respectively (see Table 5).

Stock price is determined by equalizing the sum of the present discounted value of the expected cash flow in medium and long term or with the value of the firm. Therefore, it must not change by fine-tuning the dividend payout ratio or changing the accounting standards on

See Appendix.

¹² After enforcement of New Banking Law in April 1984, banks came to be able to freely determine their dividends. However, MOF practically imposed the ceiling of the dividend payout ratio of 40% upon banks.

the capital gain/loss. If the programs like tuning the ceiling of the payout ratio and changing the accounting systems appear to be effective on the stock prices, it must be just *illusions*. There may be correlation here, but not direct causation. It can be concluded that MOF, which conducted PKO depending on these illusions, took fruitless actions.

Furthermore, these programs were not only useless but poisonous for the markets. Critical comments against the programs followed quickly in August 1992. From a global point of view, the changes of the accounting standards mean a national window-dressing settlement by MOF itself. It hides the fact that Japanese financial institutions were struggling with huge non-performing loans (*The Nihon Keizai Shimbun*, January 31, 1993). One of the criticisms was that the changes in the accounting systems just had a negative effect on the stock prices¹³ (*The Nihon Keizai Shimbun*, January 31, 1993). Even if these action programs had some illusory effects on the prices of stock, they did paralyze the secondary market and bring about a result reverse to what was intended. The market manipulation by MOF, consequently, did not relieve the financial institutions, as discussed in the following section.

The required policy at this time – in the short run as well as in the long run – should have been to adapt the international accounting standards and show the clear way to resolve the massive amount of non-performing loans. Instead of moving toward a resolution, MOF put off any kind of action.

3-2. “Intervention by Lips”

The second measure to put a restraint on selling stocks was “moral suasion.” This was called “*intervention by lips*” in the market.

¹³ It means that there were some asymmetric information between the domestic investors and the foreign ones. The foreign investors considered that the Japanese government hid something. According to the DDM in the Appendix, risk-adjusted discount rate or market capitalization rate becomes higher for the foreign investors than those for the domestic ones, because of asymmetric information.

The Ministry of Finance (MOF) could not find any practical measures to restrict selling stocks in the free markets. What MOF could do was to put *invisible pressure* upon the market players by interviewing them on whether they intended to sell more stocks.¹⁴

But there was a limit to the “*intervention by lips*” of MOF. Firstly, this method had some psychological effect on the financial industries, which were under supervision of MOF, but no effect on the other industries such as the manufacturing industry, which did not need to be sensitive to MOF’s mood. Foreign financial institutions did not follow MOF persuasion, neither. Then MOF requested main business associations such as the Japan Federation of Economic Organizations to forbear selling stocks. But this request was ignored by not only the industries that were not supervised by MOF,¹⁵ but also individual and foreign investors. Table 6 shows the stock trading volume by types of investors at the Tokyo Stock Exchange First Section. As the table illustrates, it is obvious that the non-financial industries still continued net selling after August 1992 when PKO started.

Secondly, although it was limited, there was another indirect way for the financial

¹⁴ MOF held interviews with security companies on the stock markets. Someone from an asset management company, which was a subsidiary of a large bank, mentioned “*intervention by lips*”; he learned, after his selling order of some stocks, that MOF had traced the trading (especially selling stocks) of the day. He felt dismal and invisible pressure when he heard this from a security company (*The Nikkei Financial Daily*, November 19, 1992). According to a trader of a life insurance company, which was under control of the *Banking* Bureau of MOF, the company received an interview from the *Security* Bureau about its stance to sell stocks. Although MOF never told at that time that he should not sell stocks, he felt its strong unspoken message, “Not to sell stocks.” (*The Nihon Keizai Shimbun*, January 31, 1993).

¹⁵ The head of the Security Bureau of MOF requested the representatives of the companies to forbear selling stocks at a meeting of the Japan Federation of Economic Organizations on November 12, 1993. But with an objection from an adviser of an automobile manufacturer, the government official shrank and withdrew his request, then said, “This is my personal opinion. I hope that all you can keep this in your mind.” (*The Nihon Keizai Shimbun*, December 11, 1993). An executive of a financial institution regretted that non-financial companies had not followed MOF’s direction. But there was no merit for non-financial companies to cooperate with PKO that had no effect.

institutions to sell their stocks. They could sell off their stocks indirectly with cashing their investment trusts.¹⁶ In addition, some financial institutions came to use foreign securities companies to sell their stocks (*The Nihon Keizai Shimbun*, December 11, 1992).

Thirdly, it was absolutely astonishing. MOF itself had to change its stance toward permitting financial institutions to sell their stocks with some restrictions after February 1993. MOF forced financial institutions not to sell their stocks to make profit in August 1992. However, as time went on, it was getting obvious that the restrictions by MOF would bring about the harmful results to the financial industry. For instance, a lower-ranked city bank hoped to sell the stocks of a regional bank because of its tight cash positions, though it was hard for the bank to do so under the restriction (*The Nikkei Financial Daily*, February 17, 1993). PKO was conducted with the aim of supporting the stock markets (in the other words, financial institutions); however, the result was that it drove financial institutions into bad condition with binding their economic activities. Financial institutions were unable to change their portfolio with their own wills. Things came to this pass, MOF admitted banks to sell stocks in order to realize capital gains, as far as amortizing non-performing loans and allowance for doubtful accounts.

It is possible to conclude that the restrictions on selling stocks finished at this point.

3-3. Evaluation of the Restrictions on Selling Stocks

The restrictions on selling stocks will be summarized here (see Figure 2).

The restrictions on selling stocks were imposed in two ways. One was “changes in the accounting systems,” and the other was “*intervention by lips*.” The change in the accounting

¹⁶ The volume of cashing the investment trusts reached ¥1,450 billion over two months between January and February 1993. It was consequently ¥26 billion of net selling in investment trusts. In this way, financial institutions indirectly sold stocks through cashing mutual funds (*The Nikkei Financial Daily*, March 26, 1993).

systems does not basically influence the stock prices. If the stock prices appeared to be affected by that, it would be an *illusion* in the markets. Furthermore, this change in the accounting standards was regarded from overseas as a national window-dressing settlement by MOF because of asymmetric information between Japanese investors and foreign ones. It also drove foreign investors to wonder if Japanese financial institutions were deeply struggling with massive non-performing loans. As a result of this, foreign investments in Japanese stocks decreased.

“*Intervention by lips*” temporarily produced some effects on domestic financial institutions. But it got nowhere for non-financial institutions, foreign banks and security companies, individual investors and foreign ones. Some domestic financial institutions found a loophole to sell stocks by cashing investment trusts. Therefore PKO was becoming less and less effective.

The result of restrictions on selling stocks can be concluded as follows. There was little temporary effect, if any. MOF had to revise its initial stance because of PKO’s negative effects on the financial system stabilization. The policy to restrain selling stocks could not achieve its initial goal and to make matters worse, it made the Japanese stock markets lose its credibility in the world. PKO just brought bad results in the Japanese stock markets.

4. Measures 2: Buying Stocks with Public Funds

The second action program of PKO was to buy stocks by using public funds.¹⁷ This program was called in the market “feeding a cannon.”

¹⁷ As shown in appendix, this corresponds to the shift of the demand curve to the upper right in Figure A of Stigler’s model. However, according to the DDM, this would be vain to drive stock prices upwards, because buying shares with public funds does not influence on the flow of future dividends.

4-1. Outline of the Measures

“Public funds” in this paper mean ‘postal savings,’ ‘postal life insurance funds’ and ‘public pension funds’ consisting of welfare pension funds and national pension funds. Figure 3 illustrates the flow of public funds into PKO. The Ministry of Posts and Telecommunications lends postal savings and postal life insurance funds to the Postal Life Insurance Welfare Corporation (PLIWC) at the rate of “basic interest rate” (kijun-kinri) of the Fiscal Investment and Loan and then PLIWC trusts them to trust banks. Trust banks put the funds in terms of “individually operated designated money trust (IODMT),”¹⁸ so PLIWC can indirectly invest to stocks. Similarly, the Ministry of Health and Welfare lends money to the Pension Welfare Service Public Corporation (PWSPC), and then PWSPC allocates them to trust banks, life insurance companies, and asset management companies. Trust banks also put the funds in terms of “individually operated designated money trust.” PLIWC repays the interest and principal from its profits.

In the “Comprehensive Economic Stimulus Measure” on August 28, 1992, the government expanded the amount of public funds to be allocated into buying stocks, as the “Market Activation Plan” (Table 7). This plan consisted of the following three programs.

The first of the three was expanding the amount of public funds that could buy stocks. The amount increased by ¥1,120 billion into ¥2,800 billion.

The second one was the abolition of the stock-investment ceiling to “individually operated designated money trust (IODMT).” The government previously had set

¹⁸ Money trust consists of (1) designated money trust, (2) loan trust, and (3) corporate investment fund, or specified money trust. The designated money trust is that trustors designate trust banks outline of investment - how to invest their fund by rule of thumb, but that concrete points on asset management such as ‘specific stocks or brand names’ to invest are determined by trust banks. This designated money trust is divided into (a) individually operated designated money trust, and (b) jointly-managed money trust. The former is that trust banks individually manage their trustors’ funds. The later is that some trustors’ funds are jointly-managed by the trust bank. See Shikano (2001).

stock-investment ceilings of 30% for pension funds and postal savings and 80% for postal life insurance. But this ceiling was lifted up. Since then, the money trust without the ceiling is called ‘*new* individually operated designated money trust.’ Table 7 shows the amount of this new money trust in the supplementary budget of the fiscal year 1992 and the budget of the fiscal year 1993.

The third program was a change in the repayment condition of the Fiscal Investment and Loans. MOF admitted the Postal Life Insurance Welfare Corporation (PLIWC) to repay the interest and principal to the Trust Fund Bureau (TFB) every 5 years but not every year. As mentioned earlier, PLIWC had to repay the interest and a certain amount of its income to a “special account” of the central government, called “Special Account of Postal Life Insurance.” But since it came to be hard for PLIWC to repay the interest and principal to the TFB due to stagnant stock prices, the repayment term was expanded into 5 years from one year.

However, as described below, these measures could not stimulate demand for stocks.¹⁹ The public funds, which were allocated for buying stocks by the government in the fiscal year 1992, were ¥2,800 billion in value. The total market value of listed stocks in the Tokyo Stock Exchange First Section was ¥281.3 trillion at the end of September 1992. That means that ¥2.8 trillion of public funds was only about 1% of the total market value of the Tokyo Stock Exchange.²⁰

¹⁹ The “Market Activate Plan”, conducted on August 28 1992, included some programs not only to stimulate demand for stock by public funds, but also to expand the individual stockholders by deregulations. For example, these are a deregulation of the employees stock ownership program (announcement: on November 10, 1992), an establishment of the cumulative stock investment program (announcement: on November 17, 1992, and started February 1993), and so on. Since these are classified as deregulations but not PKO, these are not analyzed here.

²⁰ This does not deny that significant amount of public funds being poured into the stock market on a specific day, temporarily cheers the stock prices up. In fact, some people considered that MPT or MHW tuned the timing of pouring public funds to affect the stock markets. However, this does not mean that stock prices can be affected by public funds over several days or weeks.

The effect of this scheme on the stock markets will be investigated in the following section.

4-2. Stock Trading Volume and Value by Types of Investors

Policymakers may have considered that the purchase of stocks by using public funds would drive demand for stocks upward and then stock prices would increase, other things being equal.²¹ However, it was not easy to sustain stock prices, nor increase the trade volume, in spite of pouring public funds.²² Other things seem to have changed. Table 6, which shows the stock trading volume by types of investors, gives an answer how other things changed. The table illustrates that almost all types of investors turned into net sellers (only banks were buying on balance) in 1992. In this table, trust banks, which were actually in charge of buying stocks with the public funds, are classified into the category of “Banks.” It can be concluded that “net buying” in the category of “Banks” came from the activities based on PKO through trust banks. Table 6 indicates that the demand for stocks in the private sectors was decreasing, despite massive public funds for stimulating the stock market.

4-3. An Ambiguous “Principal-Agent” Relationship

It may be useful to visualize the relationship between the principal and the agent on PKO here.

It came to be argued after 1993 that PLIWC and PWSPC should raise the proportions of stocks to the total assets at “Voluntary Management of Public Funds.” Therefore, it should be considered that the stock investment by PLIWC and PWSPC includes not only their initial budget of IODMT, but also the additional investment to stocks, which was generated by reforming their portfolios.

²¹ See the Stigler’s model in Appendix.

²² “*Intervention by lips*” was also used in the purchase of stocks with public funds. MPT, which was indirectly involved in the operation of the postal life insurance funds, sent the following messages to its trustees, trust banks. The messages were that trust banks should deduce the reason why the government had decided to loose the operating ceiling of public funds, and that trust banks should increase the weight of equity to the initial level (*The Nihon Keizai Shimbun*, November 19, 1992).

Figure 4 illustrates the “Principal-Agent” relationship between trust banks and the Postal Life Insurance Welfare Corporation (PLIWC) in the case of asset management for postal life insurance funds. PLIWC puts the asset management in the hands of some trust banks. Since PLIWC was supervised by the Ministry of Posts and Telecommunications (MPT), MPT (or PLIWC) was a principal and the trust banks were agents in this case.

According to the contract between MPT (or PLIWC) and the trust banks, the trust banks were required to maximize the return of investments as the agents. Whenever the trust banks predict downward of stock prices, it is suitable behavior as agents to decrease purchasing stocks. It is rational to buy stocks at lower prices and to sell them at higher levels. From the point of view of economic rationality, the fact that the trust banks took orders from MPT to buy stocks for stabilizing the stock markets was contradictory to the initial principal-agent contract to maximize profits.

As a matter of fact, under this agent-principal relationship, it was useless to keep conducting PKO. Although the Ministry of Finance (MOF) was struggling to support stock prices by PKO, non-financial institutions did not follow MOF’s directions, and some financial institutions exploited loopholes. Against this background, it was practically difficult to sustain stock prices. The trust banks came to consider the following: purchasing stocks at relatively higher prices in the stagnant or downward markets as MPT suggested would bring about capital loss later. The poor performance in asset management might force the trust banks to reduce the quota of funds with which they dealt, or in the worst case, they would lose the contract with MPT and be excluded from designated members. However, in order to avoid falling into the poor performance in asset management, declining to cooperate with MPT in PKO would incur the displeasure of their regulatory authority (MOF) as well as MPT. As a result of this dilemma, the trust banks decided to buy stocks in the *spot* market as MPT directed, but, at the same time, sell them in the *futures* market, in order to hedge the capital loss. It, in practice, was expected by parties concerned that there would be those movements in the

markets (*The Nihon Keizai Shimbun*, January 31, 1993).

Stock prices were temporarily sustained by PKO, but they began collapsing in the futures market soon. The trust banks, which were the agents in asset management, betrayed their principal, MPT. PKO finally came to be ineffective through the futures market. Therefore, even though the trust banks turned into net buyers of stocks as shown on Table 6, it does not mean that they sustained stock prices by using public funds.

This ambiguous principal-agent problem also caused another issue. It was not clear where responsibility of PKO lay. The Ministry of Posts and Telecommunications (MPT) and the Ministry of Health and Welfare (MHW) insisted that neither of them never directed trust banks to buy stocks to prop the markets and that it was the decisions of the trust banks themselves to purchase stocks. And the Ministry of Finance (MOF) always said that it had nothing to do with PKO.²³ Things came to this pass, and none of the ministries took responsibility for the outcome of PKO.

A more interesting fact was that MPT came to be unable to sustain the policies, with ignoring market mechanisms. The flow of public funds illustrated in Figure 3 would more comprehensibly help to understand this. In those days, MPT had to put the postal life insurance funds to the Trust Fund Bureau of MOF at first. And then MPT borrowed the funds from the Bureau and lent them to the Postal Life Insurance Welfare Corporation (PLIWC) at the rate of the Fiscal Investment and Loan. PLIWC, then, entrusts its asset management to trust banks. PLIWC repaid the interest and principal to MOF from its investment profits.

PLIWC made a great valuation loss in the stagnant stock markets. The value of its loss reached ¥10.3 billion in the fiscal year 1992, and almost same in the fiscal year 1993 (*The Nihon Keizai Shimbun*, December 25, 1993). In spite of its loss, PLIWC had to repay interest

²³ For instance, manager of the Security Bureau of MOF told that they conducted daily interviews to security companies to grasp movements in the markets, as a part of security administration, but that they never directed anyone not to sell stocks or buy them. (*The Nikkei Financial Daily*, November 11, 1992).

payments to the Trust Fund Bureau. MPT finally decided to redeem ¥1,600 billion, the PKO funds from PLIWC, to the Trust Fund Bureau in July 1993 (*The Nihon Keizai Shimbun*, December 8, 1993). The initial budget for the individually operated designated money trust (IODMT) in the fiscal year 1993 was ¥2,800 billion, so it is easily recognized that the amount of redeem by MPT was extremely large.²⁴

4.4. Evaluation of the Buying of Stocks with Public Funds

Public funds were actually used with the aim of cheering up the stock markets; however, PKO, in practice, could not achieve its initial purpose (Figure 5). Firstly, private demand for stocks decreased with the appearance of the increasing of public funds. Secondly, the trustee, trust banks, sold stocks in the futures market to hedge the future stock prices. This movement accelerated the decline in the stock prices. Thirdly, MPT withdrew its funds from PKO, when MPT officials were confronted with the enlargement of capital loss.

In the light of things mentioned above, it can be concluded that the effect of PKO by buying stocks with public funds was absolutely limited.

²⁴ Manager of the Planning Division of Fund Management, Postal Life Insurance Bureau of MPT said, “It came to be impossible to support the prices of the securities any more.” (*The Nihon Keizai Shimbun*, December 11, 1992).

However, MPT came to get a way to propel its stock investment by lightening the burden of PLIWC to repay the interests to Trust Fund Bureau (TFB) after the fiscal year 1994. To put it concretely, the interest rate for PLIWC’s repayment to TFB, was reduced from the basic interest rate of the Fiscal Investment and Loan into the variable interest rate based on market, in the fiscal year 1994. In addition, the new interest rate could be applied back for the IODMT, which were already set up. (*The Nikkei Financial Daily*, March 4, 1994).

5. Measures 3: Freezing and Passing up the Release of State-owned Shares

The third measure of PKO was freezing and passing up the release of the government holding stocks.²⁵ They were to freeze the selling of the stocks of Nippon Telegraph and Telephone Corporation (NTT), and pass up releasing the stocks of East Japan Railways Co. (JR East) and Japan Tobacco, Inc. (JT). The details are described below.²⁶

5-1. Restriction on Increase of Capital Stock

The total supply of stocks is divided into two parts: the private sector and the public one. In order to sustain the price of stocks, it would be necessary to put restrictions on additional stock supplies in both sectors.

At that time, the increase of stocks in the private sector was already limited under “voluntary restraint on new stock issue” by the Securities Dealers' Association. Due to poor stock markets, new public offerings of stock had not been caught out by the voluntary restriction since March of 1990. The Securities Dealers' Association tried to lift up the restriction and restart public offering of stock in April 1992, but its members did not reach an agreement. It took another 2 years before the association managed to start new public offerings again in 1994.

²⁵ As shown in Appendix, this prevented the total supply curve of stocks from shifting to the right, in Figure A of Stigler's model. And it also can be explained by the DDM why limiting the number of the stocks issued can prevent stock prices from declining. The reason is that the price of stock is equal to the ratio of the value of the firm to the number of stocks.

²⁶ Three public corporations: Japan National Railways, Nihon Telegram and Telephone Public Corporation, and Japan Monopoly Corporation were privatized in 1985; however, the government kept holding these stocks afterward. There were several opinions against the fact that the shares of these new privatized companies were not open to the public. Some of them were that privatization of those corporations was not complete, and that the national debts should be reduced by the capital gain by IPO of these companies. So, the first release of the state-owned stocks of NTT was taken effect in 1987.

In addition to the private sector, if the government had been able to put limitations on selling new stocks in the public sector, PKO measure might have been effective. Indeed, under the “Market Activate Plan” on August 28, 1992, additional release of state-owned shares of NTT was frozen and initial public offering (IPO) of two once-state-owned companies, JR East and JT, were postponed.

5-2. IPO in the Worst of Times

But a half-year later, economic circumstances around the markets began to drastically change. With the increase in purchasing Japanese stocks by overseas investors, the government predicted that stock prices would not decline any more. In addition, it considered that “initial public offering” of blue chip companies such as JR East and JT would stimulate the markets. But the fact that the market started hovering after JR East listed on October 26, 1993, proves that this projection was wrong. In the listing of JR East, the two PKO measures were also used. As mentioned above, they were “*intervention by lips*” and “buying stocks with public funds.” However, skeptical view on continuation of PKO spread over the markets after October 26. On October 27, the following day of IPO of JR East, the Nikkei Average dropped below ¥20,000 and kept declining after then. It dropped below ¥19,000 on November 4, and finally below ¥16,000 on November 29.

5-3. The End of PKO

In order to sustain the stock markets, the government had to continue to freeze and pass up the release of its holding stocks. But the government gave up putting limitations on selling new state-owned stocks in October 1993. It can be concluded that PKO in narrow sense, which had been undertaken in August 1992, ended at the time.

6. The Economic Consequences of the ‘Price Keeping Operation’

The main conclusions of this paper are as follows.

6-1. The Appearance of ‘PKO’ and its Background

1) The appearance of ‘PKO’

With the Nikkei Stock Average’s sharp fall below ¥14,000, the government announced the “Administration for Financial Operation for Our Immediate Needs,” in order to impose restrictions on selling stocks, on August 18, 1992. The government also made the Comprehensive Economic Stimulus Measure including the “Market Activate Plan” on August 28. It consisted of two plans: buying stocks with public funds, and freezing and passing up the release of state-owned shares. Like this, the framework of ‘PKO’ was completed.

2) The background of the appearance of ‘PKO’

It was considered among the market players and the policymakers in those days, that a level of ¥17,000 at the Nikkei Stock Average was a “critical point” for the financial stability. People worried if the Nikkei Stock Average dropped below the level of ¥17,000, it would trigger financial instability. Capital loss generated by a sharp decline of stock prices would bring about the deterioration on balance sheets of the financial institutions and then it would cause instability in the financial system. Against this background, the government came to bring the PKO programs into force.

3) Prospect for the stock markets – among the policymakers

At that time, there was an expectation among the policymakers that the Japanese economy would recover within the following half-year while the stock markets were supported by PKO. It is considered that this view encouraged the government to take the PKO programs. This means that the policymakers had a very optimistic view about *the future* of the stock markets.

And “*the future*” for them in this case was the very near future such as following a half-year or so.

4) Prospect for the stock markets – among the market participants

On the other hand, the market participants – not only individuals but also business corporations – took a pessimistic view of the future of the stock markets. The best example was trust banks’ hedge. Some of the trust banks did buy stocks in the spot market, following invisible administrative pressure, though, at the same time, they hedged by selling stocks in the futures market, with predicting downward of stock prices. It is believed that market participants cared about the stock markets in the long run. It was very contrastive with the fact that the policymakers considered the markets in the short run.

5) Failure on policy assignments

PKO should be evaluated from the point of “Policy Assignments.”

As shown in Section 2.2, PKO was conducted under the fear of financial instability by the sharp decline of stock prices in the early 1990s. It means that the government assigned a policy, “PKO”, to its policy objective to stabilize the financial systems, as Table 8-1 illustrates.

However, ideal policy assignments against the financial instability should have been resolving the non-performing loan problem and improving the ability of Deposit Insurance Corporation of Japan, as indicated in Table 8-2. Not only standard macro economic policies such as fiscal and monetary policy, but also micro economic policy such as reforming the securities taxation system, were necessary to stabilize the stock markets. PKO, as discussed in this paper, indeed was not needed.

The failure of PKO was based upon the misunderstanding of the policy assignment.

6-2. The Economic Consequences of PKO

1) The first action plan of PKO was “the restrictions on selling stocks.”

This consisted of “changes in the accounting systems,” and “*intervention by lips*.”

1a.) Changes in the accounting systems

Since it is determined to be the sum of the present discounted value of the expected cash flow, the stock price must not change by altering the dividend payout ratio or the accounting standards on the capital gain/loss. If fine-tuning the payout ratio and changing accounting systems appears to be effective on the stock prices, it must be just illusions.

Since, from the global point of view, the changes in the accounting standards were regarded as a national window-dressing settlement by MOF itself to conceal the Japanese financial institutions’ poor condition by bad loans, it just had a negative effect on the stock prices.

1b.) “*Intervention by lips*”

The other measure to curb selling stocks was *intervention by lips* with imposing psychological pressure on market players.

This way had some psychological effect on the financial industries, which were under supervision of MOF, but it got nowhere for non-financial institutions, foreign banks and security companies, and domestic and foreign individual investors.

If everything actually goes well with PKO by *intervention by lips*, the stock prices would temporarily rise. But at the same time, the stock trade turnover would be getting poorer, and the liquidity of the stocks would be decreasing. The more effective *intervention by lips* was, the less it could bail out the financial institutions.

Against this background, MOF came to be forced to change its basic stance to put restrictions on selling stocks in February 1993.

2) The second action program of PKO was to buy stocks by using public funds.

In spite of funneling considerable public funds into the stock markets, it was not easy to sustain stock prices. The reasons were as follows.

First, demand for stocks contrarily decreased in the private sector, in response to the increase of public funds to buy shares.

Secondly, the trust banks, which were in charge of asset managing of public funds, sold stocks in the futures market in order to hedge their capital loss, at the same time that they bought stocks in the spot market. This movement accelerated the decline in stock prices.

Thirdly, the Ministry of Posts and Telecommunications (MPT) withdrew its funds from PKO, when its officials were confronted with the enlargement of capital loss of the Postal Life Insurance Welfare Corporation (PLIWC).

3) The third action program of PKO was freezing and passing up the release of the government holding stocks.

In those days, the increase of stocks in the private sector was already limited under “voluntary restriction on new stock issue” by the Japan Securities Dealer’s Association.

The government came to consider that “initial public offering” of blue chip companies would stimulate the markets. It quitted freezing and passing up the release of the state-owned shares and brought the IPO of JR East into force in October 1993.

On the following day of IPO of JR East, the Nikkei Average began going down and finally dropped below ¥16,000 in November.

4) It can be concluded with the above evidences that PKO had very little positive effects or some negative effects in the markets. From this respect, PKO should not have been implemented in the early 1990s.

6-3. Policy Implications of PKO

The following policy implications can be derived from the experience of PKO in the early 1990s.

1) Embrace the contradiction of PKO

PKO itself contained some contradictions in its structure. The contradictions drove PKO into failure.

The first of the contradictions is that PKO exerted bad influence on the financial institutions. This propelled further financial instability. For example, there were some financial institutions, which could not adjust to their optimum portfolio. The institutions, which should have been secured by PKO, were instead strangled by PKO. Under such a situation, MOF had to change its policy stance.

The second is that profit maximization of public funds was basically inconsistent with PKO. Due to keeping PKO for a long time, the Postal Life Insurance Welfare Corporation (PLIWC) suffered large loss. As a result of this, MPT had to give up PKO by itself.

As proved above, PKO is contradictory to economic rationality. It should be accepted as a negative assessment.

6-4. Remaining Research Topics

Remaining research topics are as follows:

- In this paper, only the stock market is subject to analysis. It is also necessary to discuss how and what effect PKO had on other markets such as the bond market.
- An empirical analysis based on statistical data of PKO is also needed. In this analysis, the futures market will have to be investigated to understand the effect of PKO.
- It is also necessary to investigate what was behind the problem of policymakers assigning

ineffective policies.

- It seems that the PKO policies were conducted in some Asian countries in the 1990s. It will have to be compared what kind of programs were put into practice as PKO in these countries and discussed what their economic consequences were.

Almost ten years has passed since PKO was first conducted in Japan. Many structural changes relating to PKO have been brought about over the past decade.

- “Share buyback” came to be permitted in the 2000 fiscal year.
- As a result of the reorganization of government ministries in 2001, the Fiscal Investment and Loan program was also reformed. And the volumes of voluntary management of MTP and MHW have been expanding.
- The government has tightened the regulation of short selling since the end of 2001, due to being confronted with the decline of stock prices.

These structural changes might influence the mechanism of stock price determination. A detailed investigation on the effects of the structural changes on the stock markets is required.

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Appendix: Valuation of Stocks and PKO Policy

– How It Was Considered by Policymakers at That Time–

In this appendix, valuation of stocks is reviewed first, and then it is inferred how the policymakers who conducted PKO considered the determination of the stock.

A-1. The Fundamental Theory of Stock Price Determination

According to the DDM (discounted-dividend model),²⁷ P_0 , the value of the stock at this period, is determined by

$$P_0 = \sum \frac{D_t}{(1+k)^t}$$

where D_t , k represents dividend of time t , risk-adjusted discount rate or market capitalization rate, respectively.

According to this model, if the government has a strong incentive to push up or sustain the stock prices, the government would have to take some measures to increase the numerator D_t , and/or to reduce the denominator k .

Because D_t is a variable relating to dividends of individual firms, it is impossible for the government to control directly this variable to increase the stock prices. The government and Bank of Japan (BOJ) can have effect on D_t only through regular fiscal and monetary policies to stimulate the Japanese economy. The variable k is largely attributed to monetary policies of BOJ. In order to push the stock prices up, easy monetary policies would be a way of increasing stock prices for policymakers.²⁸

According to this theory, standard macro economic policies such as fiscal and

²⁷ See Bodie and Marton (2000).

monetary policy are only one way to increase the stock prices.

However, the government conducted the PKO programs, as described above. How did policymakers consider the determination mechanism of the stock prices at that time? The model developed by Stigler (1987) is suitable to understand this problem.

A-2. The Stock Price Determination by Stigler's Model

Figure A illustrates price determination mechanism in a market, where total supply is fixed. For instance, this is the market for "rare books" such as the first edition of *The Wealth of Nations* by Adam Smith. According to Stigler (1987), this model for the rare book market can be applied to the analysis of stock price determination in the secondary markets.

DD shows new demand for the rare books. SS shows new supply of the rare books, which the current owners want to sell. The total amount of the rare books in the world are illustrated by TT, so the difference between TT and SS indicates "reservation demand" of the owners, who would like to keep holding the rare books with them. For example, BC shows the reservation demand for keeping the books at the price of A. Put a point, G on the line of AC to make BC equal to RG, (AR+RG) represents the total demand for the rare books at the price of A. With doing the same procedures at all price levels, the total demand curve for the books, $D_T D_T$, can be drawn.

The price of the rare books is determined at the intersection of the new demand curve, DD and the new supply curve, SS. So the price becomes P_0 , because the quantity demanded for new rare books equals to the quantity supplied in equilibrium. In other words, the price of the rare books is determined at the intersection of the total demand curve, $D_T D_T$ and the total supply curve, TT. These two curves intersect at the price P_0 , which is exactly the same as the

²⁸ Mishkin (2001b) points out that the danger of the targeting asset prices by central bank.

price in the case of the new demand and supply curves.

Stigler says that this model can be applied for the stock price determination, too.

A-3. Three Measures of PKO

It can be explained by Stigler's model how the policymakers considered the PKO measures to sustain the stock prices. According to the model, three ways can be derived as counter measure against a tendency for the stock price level to decrease. The actual PKO programs conducted after August 1992 are illustrated in parenthesis on Table 2, with relating to the three ways shown using Stigler's figure.

(1) To shift the supply curve to the left

If the new supply curve (SS) shifts to the left in Figure A, the stock price will increase. But if the demand curve (DD) is inelastic for price, the total stock value will reduce.

The primary function of the secondary markets is to provide already-issued securities with liquidities. The more the supply curve is arbitrarily shifted to the left, the smaller the total stock trade becomes. As far as PKO was conducting, this contradiction was getting larger. It naturally came to be told that PKO prevented the stock markets from providing the essential function – offering liquidities.

(2) To shift the demand curve to the right

Other things being equal, if the demand curve (DD) can be shifted to the right by some policy, the stock prices will increase. However, even if the government can move the demand curve toward the right by public funds, its initial aim to sustain the stock prices will become vain, while other demand for stocks in the private sector will decrease. In reality, the decrease of private demand took place.

(3) To shift the total supply curve to the left

The third measure is to shift the total supply curve TT to the left. It corresponds to refraining from issuing new stocks in a growing economy, as well as withdrawing already-issued stocks from the markets. At first, the government decided to freeze and pass up the release of the state-owned shares, but, as time went on, took the plunge to sell those stocks.

The PKO measures could be outlined very well with Stigler's flow approach. Therefore, it can be deduced that the policymakers considered of the stock price determination as a flow-approached issue, but not an assets-approached issue at that time.

A-4 DDM dominates Stigler's Model in 1992

The difference between Stigler's stock price model and the DDM (discounted-dividend model) is as follows. According to the DDM, a stock price is determined by the discounted present value of future flows of expected dividends. The DDM indicates that the price of stock follows the general theory of asset pricing, since stock is a type of asset. On the other hand, Stigler puts much more emphasis upon the flow side, even though he cares about the stock side, the amount of total number of asset (in above case, the number of the rare books.)

The public funds, which were pumped into the stock markets, accounted for 10% of the one-day trading turnover in the Tokyo Stock Exchange First Section at its peak in 1992 (See 2.3). But it was just about 1% of the total market value of the listed stocks (See 4.1).

Suppose that the government pours public funds into the markets and that the demand curve DD shifts to the right in Figure-A. And call this new shifting demand curb, DD'. If a point, R', is put on an intersection between DD' and AC line, the ratio of the public funds to the one-day trading turnover is shown by RR'/AR . This was 10% in 1992. On the other hand, the ratio against the total market value of listed stocks is represented by RR'/OT and was about 1% at that time.

The DD curve's shift toward the right moves $D_T D_T$ curve to the right, too. But since its

shift is very small, the change of the stock price is negligible in this figure. This means that the movement of DD or $D_T D_T$ does not determine the stock price and that Stigler's model was not valid at that time.

According to Stigler's stock price model, 'flow variables' such as new demand and supply of stocks has a strong effect on the price determination. As the stock market is getting bigger and bigger, the assets approach of price determination such as the DDM becomes more valid, while the flow approach such as Stigler's becomes less valid.

Table 1 Major events relating to PKO Programs (1992~ 1995)

1992	3.16	Nikkei Stock Average drops below \ 20,000, for the first time in the past five years and one month.
	3.31	Emergency Economic Package is announced, but Nikkei Stock Average goes down to \ 19,457. This is less than a half value of its peak \ 38,915 at the end of 1989.
	4. 1	The fourth reduction of the official discount rate (4.50% ? 3.75%).
	4. 2	Nikkei Stock Average drops below \ 19,000, for the first time in the past five years and three months.
	4. 9	Nikkei Stock Average drops below \ 17,000, and reaches \ 16,598.
	6.15	Nikkei Stock Average drops below \ 17,000, again.
	7.27	The fifth reduction of the official discount rate (3.75% ? 3.25%).
	8.18	Nikkei Stock Average reaches \ 14,309. MOF announces "Administration for Financial Operation for Our Immediate Needs."
	8.28	Comprehensive Economic Stimulus Measure (Amount of Project: \ 10.7 trillion) "Market Activate Plan" is incorporated.
	9.10	The First PKO: 8.19~ 9.10 Nikkei Stock Average peaks at \ 18,900.
	11.17	Nikkei Stock Average drops below \ 16,000.
	11.18	The Second PKO: 11.18~ 12.22
1993	1.21	Stock prices rebound because of the public funds. Nikkei Stock Average evades dropping below \ 16,500.
	1.28	Nikkei Stock Average recovers above \ 17,000, due to inflow of the public funds.
End of Jan.		A belief flurry of speculation on "February Crisis": From <i>PKO</i> to <i>PLO</i> (Price lifting operations)
	2. 4	The sixth reduction of the official discount rate (3.25% ? 2.50%).
	3. 8	Former Vice President of LDP, Kanamaru, is arrested: PKO is applied quickly.
March		Yen appreciates, because of the expectation that Japanese interest rate will not decline any more. Stock prices appreciate because of the inflow of foreign capital.
	April	1993 Fiscal Year starts: the new budget begins. Maximum amount of "individually operated designated money in trust": \ 2.8 trillion.
End of July		PKO fund of Postal insurance (\ 1.6 trillion) is redeemed.
	9.21	The seventh reduction of the official discount rate (2.50% ? 1.75%).
	10.26	JR East is listed. Nikkei Stock Average drops below \ 20,000 after the following day.
	11. 4	Nikkei Stock Average drops below \ 19,000.
	11.29	Nikkei Stock Average drops below \ 16,000.
1994	April	1994 Fiscal Year starts: The new budget begins. Maximum amount of "individually operated designated money in trust": \ 2.8 trillion.
1995	1.23	Nikkei Stock Average sharply drops by over \ 1,000 after Hanshin-Awaji Earthquake, because foreign investors sell Japanese securities.
	3.23	Nikkei Stock Average drops below \ 16,000, for the first time in the past two years and four months.
	4.14	The eighth reduction of the official discount rate (1.75% ? 1.00%).
	6.12	Nikkei Stock Average drops below \ 15,000. Shinozawa, Deputy Secretary of MOF, says "PKO is the furthest thing from our mind."
	9. 8	The ninth reduction of the official discount rate (1.00% ? 0.50%).

Source) *The Nihon Keizai Shimbun* , *The Nikkei Financial Daily* .

Table 2 The Actions of PKO

Action 1 : Restricting on selling stocks

(shifting the supply curve to the left*)

- Changes in the Accounting Systems
- *Intervention by Lips* (Moral suasion)

Action 2 : Buying stocks with public funds

(Shifting the demand curve to the right*)

Public Funds:

- Postal Savings, Postal Life Insurance Funds
- Public Pension (Welfare Pension, National Pension)

Individually Operated Designated Money Trust:

- Supplementary Budget of the Fiscal Year 1992 almost \ 2.8 trillion
- the Fiscal Year 1993 almost \ 2.8 trillion

**Action 3 : Freezing and Passing up the release
of the government holding shares**

(Shifting of the total supply curve to the left*)

- **NTT** Freezing its release in the fiscal year 1992 and 1993
 - **JR East & JT** Passing up their release in the fiscal year 1992
-

note) Action1 was included in the "Administration for Financial Operation for Our Immediate Needs" on August 18 1992, and Action 2 and 3 were included in the "Market Activate Plan" in the Comprehensive Economic Stimulus Measure on August 28, 1992.

(*) See Appendix.

Figure 1-1 Nikkei Stock Average and Trade Volume (Daily Average)
1970.01-2000.12

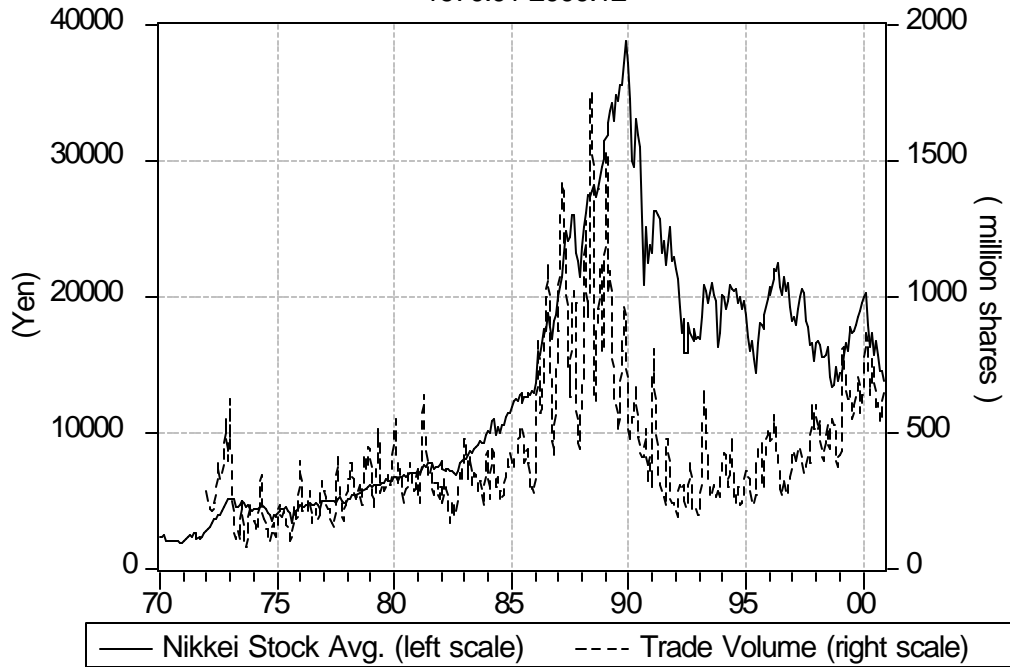
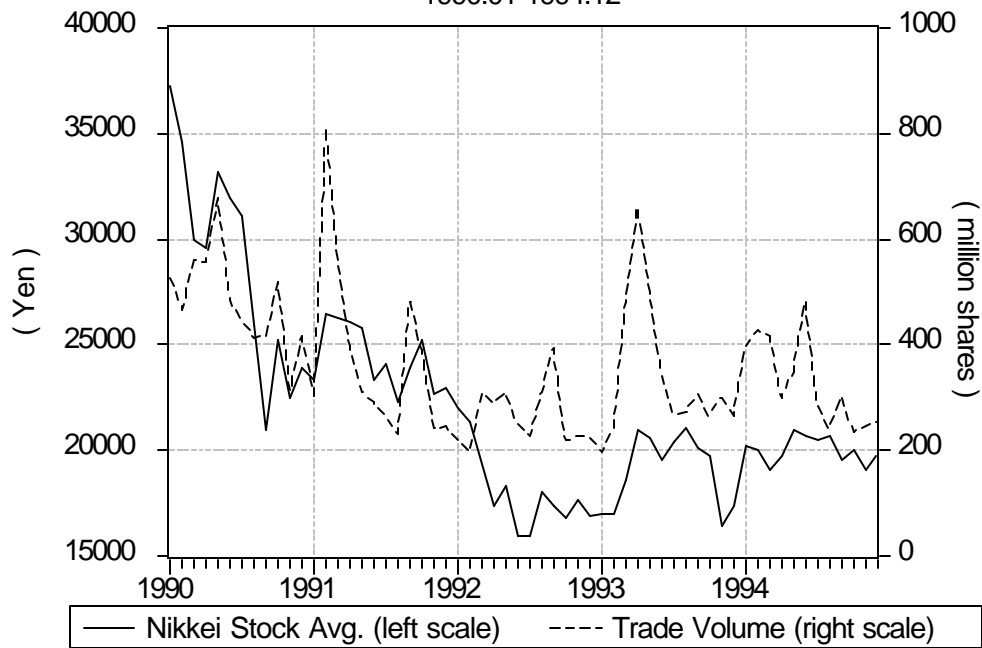


Figure 1-2 Nikkei Stock Average and Trade Volume (Daily Average)
1990.01-1994.12



**Table 3 The Collapse of the Stock Markets
and Financial Instability**

Decline of Stock Prices
?
Capital Loss
?
Deterioration in the Balance Sheet
of the Financial Institutions
?
Financial Instability

Table 4 Administration for Financial Operation for Our Immediate Needs

Aug. 18th, 1992

-
- ? To Stabilize the Financial System
 - 1 Immediate actions for the stagnant share prices**
 - (1) Restriction on the rapid realized profit**
 - (2) Temporary lift up a restriction on dividend payout ratio**
 - (3) Write-off of capital loss in semiannual financial settlement**
 - 2 Ensuring the lending capability of Banks
 - (1) Countermeasures for Credit Crunch
 - (2) Increase of the equity capital
 - (3) Liquidation of debts
 - 3 Promoting the disposal of bad assets
 - (1) Early disposition of individual problems
 - (2) Liquidation of the real estate collateral
 - (3) Environmental considerations for the disposal of non-performing loans
 - (4) Enhancement of disclosure
 - ? To Improve Efficiency in the Financial System
 - (1) Promoting the reform of the financial system**
-

(Note) Items in bold correspond to PKO measures.

Table 5 Restricting on selling stocks: Changes in the Accounting Systems

· Aug, 1992	Temporary suspension of a restriction on "dividend payout ratio" for the banks (in order to curb banks' screwing out profit by selling stocks to maintain the dividend payout ratio)
· Jan, 1993	Allowing the insurance companies to post capital gain without selling their stocks (to decrease selling shares for realizing profits)
· Jan, 1993	Putting off the disclosure of the market prices of "specified money trust" and "fund trust," which was scheduled to start in March, 1993 (in order to prevent firms from selling stocks to realize capital gain, which deteriorates the supply-demand relationships in the markets)
· Jan, 1993	Reconsideration of the extension of term of the equity investment trust, which dropped below par after April 1993.

Source) *The Nihon Keizai Shimbun*, Jan. 31, 1993.

Table 6 Stock Trading, Value by Type of Investors, Tokyo SE 1st. Section

Balance (= Purchases - Sales) (¥ 100 Million)

Year Quarter	Members' Account	Customers' Account								
		Corporations						Securities Cos.	Individuals	Foreigners
		Investment Trust	Business Cos.	Others	Financial Institutions					
					Banks	Life & Non-Life	Othres			
1985	15806	3912	-768	1139	9621	394	1163	-848	-14457	-10493
1988	61703	13936	-9350	1187	18583	4080	-1946	-1952	-49046	-20098
1989	15814	15664	-7901	2565	32573	12749	560	-1516	-32366	-26161
1990	18425	13057	7760	3133	-25469	198	-4781	653	16717	-26854
1991	14325	-17861	-17605	3786	7678	608	-4018	-2463	-24328	50635
1992	-371	-167	-7553	4537	8483	-2804	-2458	-767	229	5608
1993	4114	-3381	-18792	793	29428	-139	-2552	-1309	-11472	10113
1994	5141	-15045	-18503	3976	21653	-3929	-706	-1711	-20331	36157
1995	11213	-9782	-12930	4144	-1831	-16586	-3234	40	-2500	35792
1992.Q1	2586	-3824	-1929	796	-4461	-1603	-502	54	1532	8312
1992.Q2	-5084	2942	-429	1031	2502	-412	-830	93	2605	-1506
1992.Q3	3461	243	-2209	1300	2293	-336	-771	-435	-621	-1119
1992.Q4	-1334	472	-2986	1410	8149	-453	-355	-479	-3287	-79
1993.Q1	7472	-5772	-4791	854	2478	-874	-750	-83	-845	3791
1993.Q2	-6482	-355	-3331	1059	10391	-437	-1184	388	2763	-2485
1993.Q3	-5995	571	-6250	784	4790	151	-721	-699	-6918	3731
1993.Q4	-4323	2175	-4420	-1904	11769	1021	103	-915	-6472	5076
1994.Q1	8698	-7565	-7906	533	-13339	-2561	-854	-252	-1941	27370
1994.Q2	-2283	-3725	-2998	1062	4353	-4	222	-350	-5053	9853
1994.Q3	-4273	-460	-4180	948	17247	-369	98	-419	-5295	-2147
1994.Q4	2999	-3295	-3419	1433	13392	-995	-172	-690	-8042	1081
1995.Q1	-462	-2782	-2942	857	3276	-1021	-476	254	2838	880
1995.Q2	-2112	620	-884	1239	3251	-5676	-84	-26	-451	4245
1995.Q3	9126	-4783	-4712	904	-10231	-4924	-1766	-236	-2255	21035
1995.Q4	4631	-2837	-4392	1144	1873	-4965	-908	48	-2632	9632

Source) Tokyo Stock Exchange, *Monthly Statistics Report*, Various Issues.

Figure 2 The Economic Consequences of Restrictings on Selling Stocks

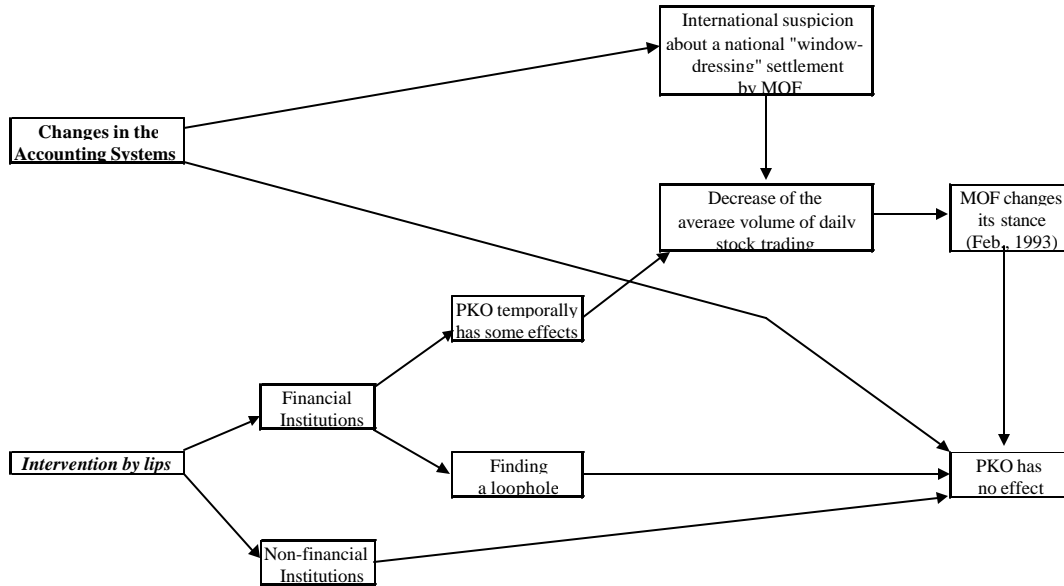
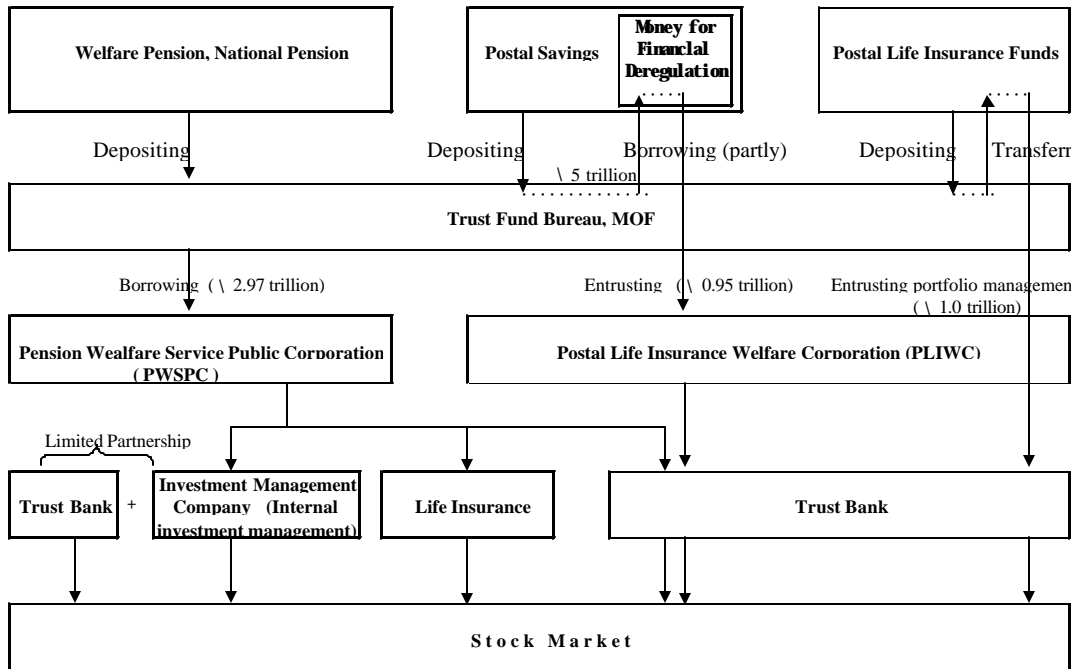


Figure 3 Flow of Voluntary Management of Public Funds to the Stock Markets



(note 1) Figures are values of "voluntary managements of public funds" in the fiscal year 1995.

(note 2) Investment by "limited partnership" started in the fiscal year 1995.

(Source) Yamaichi Research Institute(1995) *YRI Tousei Senryaku*; Data-shu (YRI Investment Strategy: Data Appendix), December.

**Table 7 "Market Activate Plan" in the Economic Stimulus Package
Aug. 28, 1992**

- Expansion of the public funds to be allocated into buying stocks
The amount increases by ? 1,120 billion to ? 2,800 billion.
- Removal of the ceiling to put the funds in shares
The ratio of stocks to "Individually Operated Designated Money Trust"
 - Postal life insurance: Maximum 80%
 - Pension fund and Postal savings: Maximum 30%
 The two limitations are lifted up.

The Amount of *New* IODMT

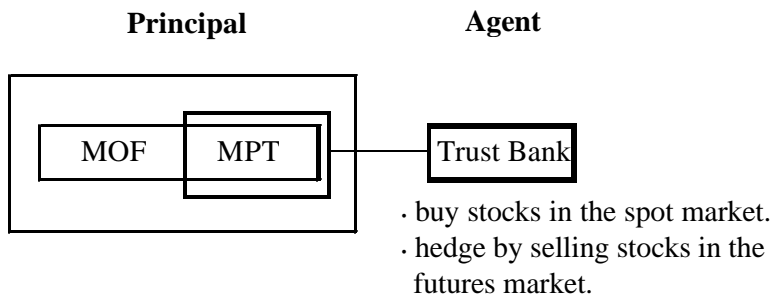
New Individually Operated Designated Money Trust

- Supplementary Budget of the Fiscal Year 1992 :? 2,800 billion
- the Fiscal Year 1993 :? 2,800 billion

- Change in the repayment condition from PLIWC to the Trust Fund Bureau:
Repayment in a lump sum every 5 years but not every year

Source) *The Nihon Keizai Shimbun*, Jan. 31, 1993.

Figure 4 The Principal-Agent Relationship in PKO



(note) The actual principal was MPT(PLIWC) for the trust banks, but it appeared as if MOF was their real principal.

Figure 5 Economic Consequences of the Buying Stocks with Public Funds

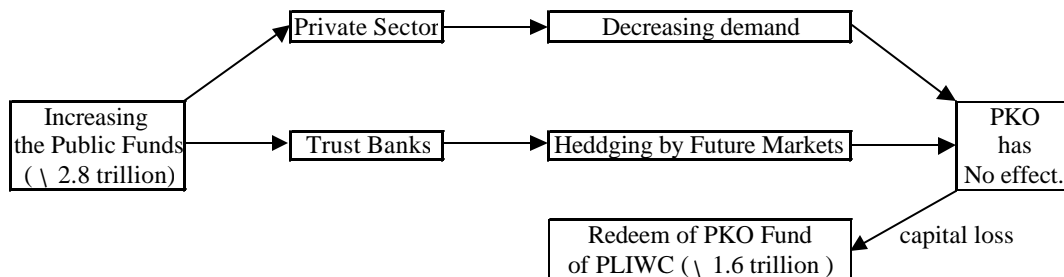


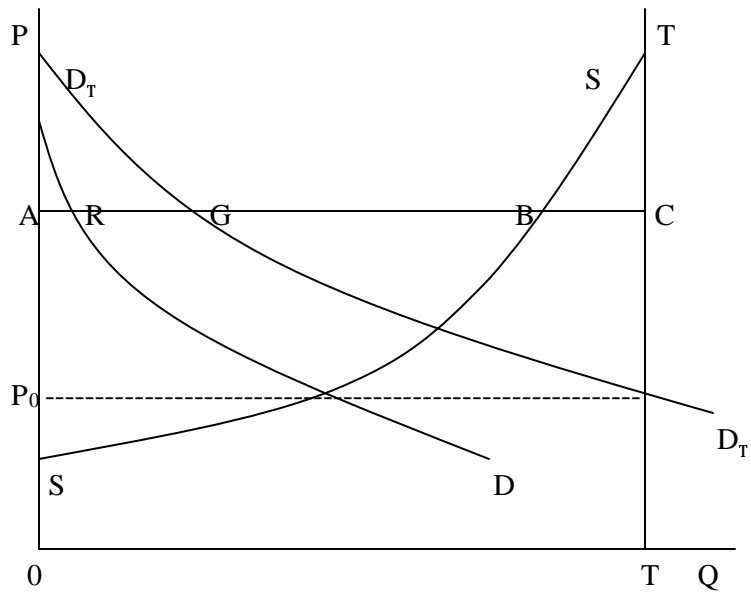
Table 8-1 Worst Policy Assignments

Policy Objective	Action Program
. To Achieve Financial Stability \Rightarrow	. To conduct the PKO programs

Table 8-2 Best Policy Assignments

Policy Objective	Action Program
. To Achieve Financial Stability \Rightarrow	<ul style="list-style-type: none"> . To deal with disposal of bad-performing loans . To implement full equipment of Deposit Insurance Corporation

Figure -A The Determination of Stock Price by Stigler



(Source: Stigler(1987), p.89)