

Working Papers Pracovní texty

Working Paper No. 5/2002

Costs of Deflation: The Case of Japan

Helena Horská

INSTITUT PRO EKONOMICKOU A EKOLOGICKOU POLITIKU

A

KATEDRA HOSPODÁŘSKÉ POLITIKY

VYSOKÁ ŠKOLA EKONOMICKÁ V PRAZE – FAKULTA NÁRODOHOSPODÁŘSKÁ

Institut pro ekonomickou a ekologickou politiku
Vysoká škola ekonomická v Praze – Fakulta národohospodářská
Katedra hospodářské politiky

Working paper No. 5

Costs of deflation – The Case of Japan

Projekt: GAČR 402/02/1290A

Helena Horská

Abstract

Costs of Deflation – The Case of Japan

Helena Horská*

An analysis of recent Japanese economic policy identifies three main ways of coping with permanent deflation and the long-lasting Japanese recession. The first strategy is to improve the coordination between monetary and fiscal policy authorities. Monetary policy should become more active and fiscal expansion should support the effort to boost the domestic economy. The second strategy involves the devaluation of the yen. However, according to the analysis, the bid to significantly devalue the yen is not feasible as there are lots of obstructions in the Japanese economy. Nevertheless, any appropriate economic policy-mix would almost certainly cause the yen to weaken. However, the yen's devaluation alone would not solve Japan's problems. The best way to solve Japan's woes is to adopt of an inflation-targeting regime and to temporarily implement unconventional monetary policy measures. An integration of these three strategies could yield the most appropriate macroeconomic policy mix.

Keywords: Japan, recession, liquidity trap, yen depreciation, inflation targeting, recession.

JEL Classification: B220, E310, E510, E520, E620

* Helena Horská, Česká spořitelna, a.s., University of Economics in Prague

Contents

1. Introduction 4

2. What happened in Japan? 4

3. Deflation from a theoretical point of view 6

4. How to escape from persistent deflation 9

5. Conclusion..... 13

Sources 15

1. Introduction

The development of Japan's economy in the last two decades is a very gloomy example of how deflation under unfavourable economic conditions can be costly. The temporary decline in price level can be seen as a means to re-establish equilibrium. Nevertheless, there are many obstructions to recovery, including a demanding restructuring of Japan's economy and the burden of bad debts: These caused the cycle of recession and deflation to evolve.

This paper demonstrates how deflation works hand-in-hand with unfavourable economic structures and other significant economic obstructions to make the situation even more complicated and difficult to resolve. Some ideas mentioned in the following text come from some of Paul Krugman's papers, in which the author presents his original opinions. In a sense, the following analysis is based on Krugman's ideas, which are augmented by rather unconventional theories confronting Japanese life. For example, the fiscal theory of the price level, as well as the theory of inflation targeting, offer interesting insights into Japan's woes.

The paper is organized in the following way. Section 2 briefly describes the sources of the long-lasting economic problems in the Japanese economy. Section 3 offers the theoretical point of view concerning on the problem of deflation. Here I focus not only on the deflationary process but also on ways to solve Japan's woes. Section 4 deals with macroeconomic strategies for coping with the phenomenon of the deflation, the recession, and the liquidity trap. Section 5 concludes with a recapitulation of appropriate macroeconomic strategies.

2. What happened in Japan?

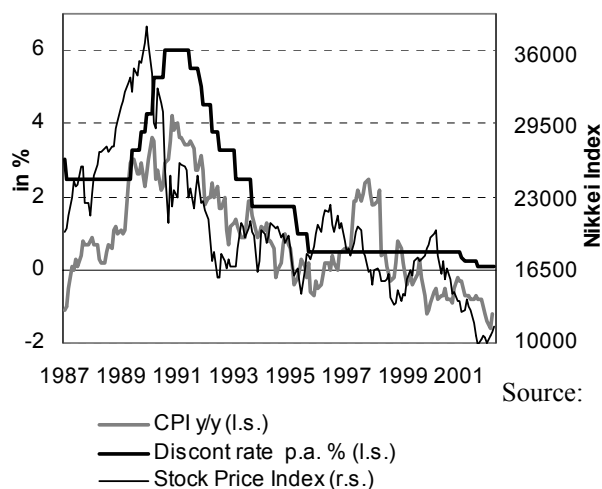
Japan's unfavourable economic conditions, which are persisting into their second decade, are a complex phenomenon. One of the first impulses generating the deflationary process in Japan's economy was the collapse of asset prices. From 1987-1990, the Japanese witnessed a rapid heating-up of domestic asset-markets, with the Nikkei index, for example, doubling during this period. The land-price-index also rose rapidly during the 1980s. The loose monetary policy at the beginning of the asset-bubble period created an excess liquidity in the Japanese economy and thereby supported asset-inflation. During the asset-price bubble, Japanese firms significantly increased investment spending as overpriced stocks lowered the

cost of external financing. In 1991, the Bank of Japan, concerned with overheating in the asset-markets, increased the official discount rate in several steps and imposed an aggregate-limit on commercial bank lending. These measures, together with the introduction of a capital-adequacy-requirement in March 1991, resulted in an inward-shift in bank-loan supply. The consequent deflation in asset-values that began at the end of 1990 caused the Japanese economy to contract. Specific features of the local economy, as well as the policy of low inflation, helped to provoke the spiral of recession and deflation.

The declining international competitiveness of Japanese firms as a result of the rapidly strengthening yen in the period of central banks' interventions from 1985-1987 required a costly restructuring of the local economy. Additionally, the gradual liberalisation of the Japanese economy led to the disintegration of the traditional corporate structures -- "keiretsu" and "zaibatsu". The deflation in asset-values and the costly restructuring of the Japanese economy significantly affected the commercial banks' balance. The value of bad loans exploded and the unexpected price-deflation redistributed the real capital gain from net-borrowers to net-lenders. The financial instability of borrowers worsened and deepened the problem of adverse-selection. Therefore, entrepreneurs and households reduced their demand on credit and the commercial banks restricted the supply of credit financing ("credit crunch"). The rise in the unemployment-rate to historical levels and unfavourable demographic evolution induced fears of a drop in the living standard and motivated Japanese households to create additional savings, which has been largely kept in liquid assets. Falling domestic demand led to a cut in capacity-utilisation, as well as reduced investment activity of Japanese firms. The savings surplus over investment enlarged despite almost-zero nominal interest rates and very low real interest rates. The high credibility of the Bank of Japan's anti-inflationary policy led to the stable, even falling, expected future price level. Therefore, the liquidity loosening by Japan's central bank and the interest rate reduction event to the zero levels did not result in a significant money supply gain. Japan's macroeconomic state can therefore be described in terms of recession, deflation and the liquidity trap.

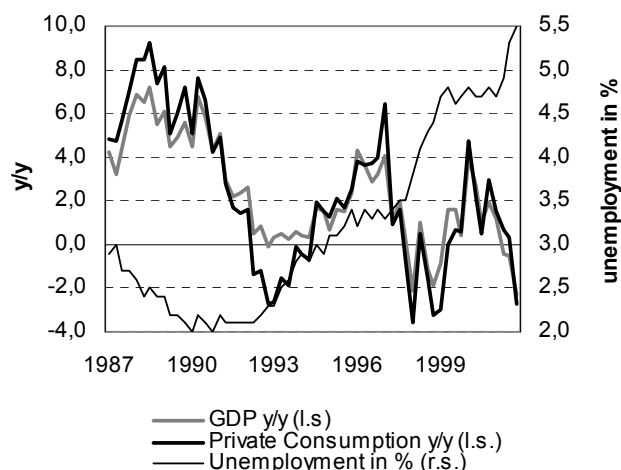
¹ In the Plaza Accord the G5 countries agreed on a stronger yen to correct the US trade deficit. The central bankers' interventions in foreign exchange markets resulted in the yen appreciating from around 240 yen/dollar in 1985 to around 150 yen/dollar in 1987.

Chart 0.1 Indicators of Economic Activity



Bloomberg.

Chart 0.2 Price Indicators



Source: Bloomberg.

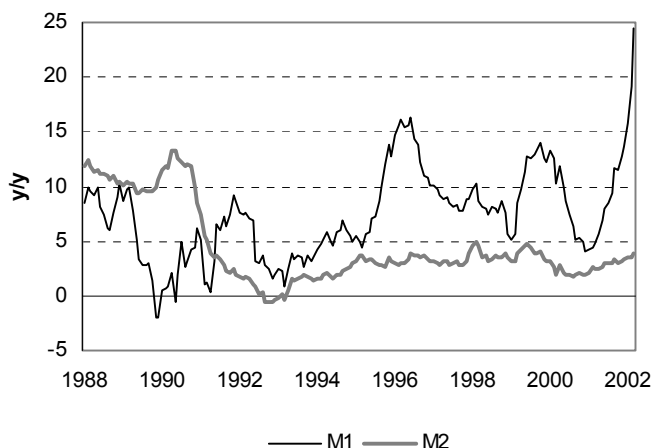
3. Deflation from a theoretical point of view

Neo-Keynesian theory (IS-LM)

The phenomenon of deflation is associated with excessive manufacturing capacities. In such a case, the monetary authority should ease its policy through an interest-rate cut. Nevertheless, sometimes monetary-easing is ineffective. This is the liquidity trap. In such cases, the interest-rates reach such low levels that money demand becomes infinite. No rate-cut stimulates domestic demand. The monetary policy fails since any money supply gain is transferred into the liquid-money balances. The economic agents are not willing to invest into loans and debt instruments. Therefore, the central bank is able to increase the money-base, but cannot control rise in broad-money aggregates. Neither interest rate's or credit's channel of the monetary policy takes effect. Theory suggests solving the problem by means of fiscal expansion. Nevertheless, under the conditions of very low multipliers of fiscal expenditures (high-saving ratio versus low-consumption rate), the fiscal expansion is predestined to be unsuccessful. Moreover, if the economic agents are rational, the fiscal easing in the current period would be expected to be replaced by a tightening during the next time-period (see Ricardian equivalence²). This would undermine the effects of the current fiscal expansion, since the negative wealth-effect from the government's plan would push prices down.

² Ricardian equivalence asserts that government's debt does not represent net wealth of the aggregate private sector. Public bonds are assets that are exactly offset by future tax liabilities.

Chart 0.3 Money Supply



Source: Bloomberg.

Neo-Keynesian theory of an open economy (IS-LM-BP)

The Neo-Keynesian theory of an open economy presumes that surplus-of-savings over investment-demand can be solved by a real exchange rate adjustment in an open-economy-model. The economy "exports" its surplus in saving abroad, while increasing foreign-currency demand weakens the domestic currency. The financial account deficit is balanced by a current account surplus. Finally, the weaker domestic currency supports exports and economic revival.

The fiscal theory of the price level

According to the fiscal theory of the price level (see e.g. Perotti), fiscal policy plays a key role in ruling out self-fulfilling deflation, when the economic agents reduce current demand by expecting a further drop in price level in the future. Nevertheless, monetary policy retains its leadership over fiscal policy as it reacts first. According to the fiscal theory of the price level, this is the best combination of economic policies.

In the case of monetary targeting (or an interest-rate-rule), one needs only a fiscal commitment -- putting a floor on nominal government liabilities-- to deal with a self-fulfilling deflation. The key to ruling out persistent deflation is to make sure that, if prices or inflation fall below a certain level and keep falling, fiscal policy is committed to setting a floor on the growth of nominal government liabilities. Then the private sector feels richer, thereby pushing prices up. If prices are falling, nominal government liabilities are constantly increasing and at

the same time reducing the net wealth of economic agents. As soon as prices start to grow, the government liabilities decline, enhancing the net wealth of individuals.

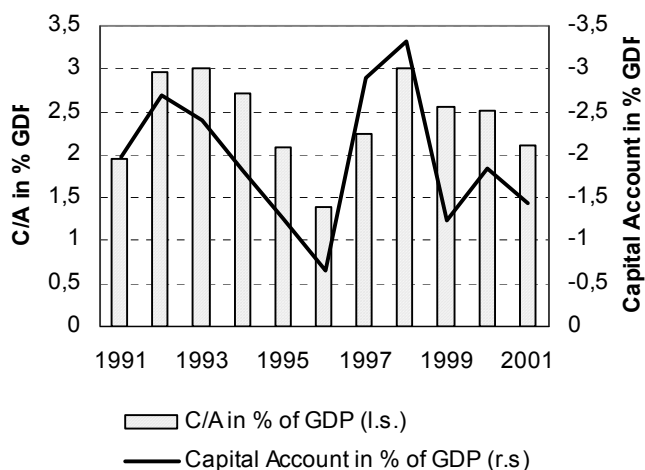
New Keynesian - Intertemporal Optimization of Consumption & Intertemporal Approach to CA

The theory of intertemporal optimization assumes that households continuously work to maximize utility through intertemporal consumption, adjusting current- and future-consumption in line with personal time preferences. In order to give up one-unit in current consumption, they require $(1+r)$ units of future consumption. If households expect the price level to decline, they have to cut their current consumption in a bid to spend more the next time period, when prices are likely to be lower. In such cases the individuals' discount rate is very high, and higher than real investment return under the conditions of savings surplus over the investment demand.

To establish equilibrium between savings and investment, households have to change their consumer preferences. Since preferences also depend on expected future price development, individuals have to be convinced that future rises in the price levels will revive their current consumption or reduce savings.

In an open economy, the adjustment can proceed through the current account-balance. Higher domestic saving in a large economy decreases the equilibrium-world-interest-rates and increases the large economy's lending to foreign countries. Investment therefore rises everywhere as a result. Unlike the case of a small country, a shift in a large country's consumption preferences can affect investment by moving the world interest rate. In the theoretical example, domestic savings and investments go up, while in foreign countries, savings diminish and investments rise. The current account of the large country reaches a surplus, while the foreign counterparts witness a shift of the current account into a deficit.

Chart 0.4 Balance of Payment



Source: Bloomberg, own calculations.

4. How to escape from persistent deflation

The above-mentioned theory suggests some ways to solve the problem of permanent deflation and the long-lasting recession in the Japanese economy. The most important points are the following:

1. to improve coordination between monetary and fiscal policy authorities
2. to devalue the local currency in a bid to import inflation from abroad
3. to implement unconventional monetary policy measures or a monetary policy regime of inflation targeting.

Better coordination between monetary and fiscal policy authorities

According to the fiscal theory of the price level, Japanese authorities should improve coordination between economic policies. Monetary policy should become more active and the loosening fiscal policy should support its effort to boost the domestic economy.

Nevertheless, the repeated assurance by the Japanese government that it will curb or reverse the growth of government debt is likely to be exactly the wrong type of fiscal policy, despite Japan's large government debt. If the public believes these assurances, this would undermine the effects of the current fiscal expansion, as the negative wealth-effect of the government's plan would push prices down.

Devaluation of the yen

In an open economy with flexible exchange rates, one of the most flexible asset-price is that of the domestic currency. The theoretical presumption that export of savings surplus leads to domestic currency-depreciating, stimulating the domestic economy through exports, need not occur in the real world. Lots of obstacles subdue the devaluation stimuli.

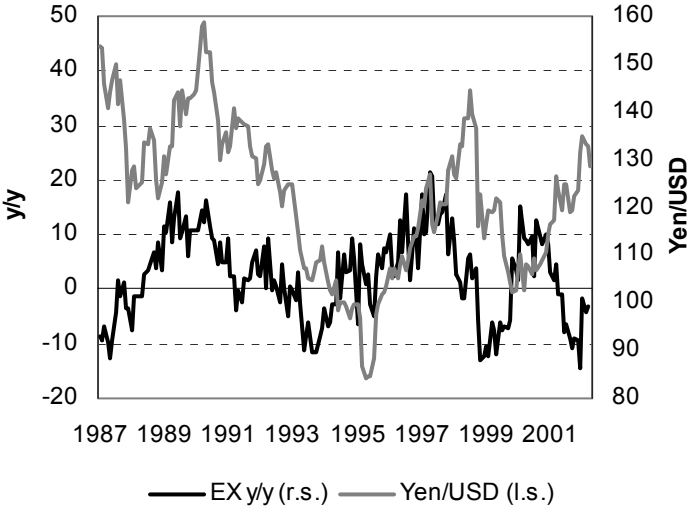
First, small shares of foreign trade in the GDP and low price elasticity of exports and imports allow only moderate real depreciation. Chart 4.1 shows how the dependency of exports on the yen exchange rate is low; therefore, for exchange-rate-fluctuations to have a significant effect, a devaluation of the yen would have to be large (up to 160 Yen/USD). Therefore, Japan's massive current-account surplus of roughly 1% GDP, the rich world's largest, is not large enough to offset the domestic surplus in savings over investment demand, valued at 2% of GDP. Moreover, economic agents see such depreciation as being temporary, even in the case of zero-interest rates, since the convergence of export revenues and investment proceeds will increase demand for the yen. Additionally, in the case of a crisis, Japan's investors seek shelter at home as the risk-aversion increases, thereby bidding up the domestic currency.

Secondly, in Japan, unlike in most countries, the Ministry of Finance controls foreign-exchange reserves and makes decisions regarding foreign currency intervention. Due to a more or less unusual institutional arrangement, interventions are at least partially influenced by politics. Though the Japanese government almost certainly welcomes a weaker yen, it does not want to be seen as pursuing an explicit policy of devaluation in the face of increasing complaints from the rest of Asia. In addition to the geopolitical obstacles of massive intervention against the yen, there is another problem the extent of intervention. And that is if the government tries to close the gap between savings and investments, it has to sell the domestic currency in volumes of 10-15% of GDP [Krugman, 1999].

Finally, the large scale of the yen's devaluation is likely to trigger other devaluations throughout Asia. Such competitive devaluations across the region, which account for 30% of world-trade, would also transmit deflationary pressures on its importers -- America and Europe. According to Credit-Suisse-First-Boston estimations, if the yen eases up by at least 25%, to Yen 150-160, this would likely halt deflation in Japan. In this hypothetical case, other Asian countries would be forced to follow. Lower import-prices and stronger price-competitiveness would push inflation down dangerously near to zero in the United States and

Europe as well. These countries would have to respond with significant monetary-easing in order to avoid deflation.

Chart 0.5 Export versus Yen



Source: Bloomberg.

Appropriate monetary policy regime and policy measures

Before discussing appropriate monetary policy measures that could take the Japanese economy out of the spiral of deflation and recession, I shall specify the proper monetary policy regime.

According to the fiscal theory of the price level, a monetary policy regime based on an interest-rate rule is inappropriate because it is powerless when the zero-nominal-interest-rate bound is reached. Even the other monetary policy regime - the targeting of money supply - does not have the power to rule out persistent deflation. Though the monetary-targeting is not constrained by such bounds, the satisfactory level of real balances is reached at a zero-interest-rate, though higher real balances do not stimulate more demand. According to Perotti, even Krugman's argument, that future increases in money supply can create inflation, thus reducing real interest-rates at a zero-nominal-interest-rate-level, does not prevent a deflation path. The equilibrium would only involve a higher level of excess in the real balances. A self-fulfilling deflation may well occur even with a high rate of money growth.

In the case of a real economic shock, such as a temporary deflation, a regime that creates expectations of subsequent inflation may avoid a period of sharp and long-lasting deflation. In our view, inflation targeting is the appropriate policy.

Nevertheless, the implementation of inflation targeting alone does not solve the problem of the liquidity trap. Central bankers have to change their way of thinking, since inflation targeting relies on transparency and credibility of a central bank.

One of the most important components of inflation targeting is the specification of inflation targets. According to estimations of errors in inflation measurement, the inflation target should not be set below roughly 2%; otherwise, the risk that the economy would occur in the situation requiring negative-nominal-interest-rates will significantly increase.³

The theoretical background of inflation targeting is based on a symmetric view of deviation from the inflation target, since the central bank minimises its lost function in the quadratic form:

$$\text{Min } (L) = \lambda E(p-p^*)^2 + (1-\lambda)E(y-y^*)^2,$$

in which L represents a lost function of a central bank. $E(p-p^*)$ represents the expected deviation from the target inflation rate p^* . p^* is simultaneously the socially optimal inflation rate. $E(y-y^*)$ represents the predicted output gap. The parameter “ λ ” measures the weight placed on the deviations from the targeted inflation-rate. In case of "strict inflation targeting regime", the parameter “ λ ” becomes equal to 1. The positive “ λ ”-value lower than one is interpreted as "flexible inflation targeting".

In order to be consistent with the inflation-targeting regime, the central bank has to be able to evenly gauge the under- or overshooting of an inflation target by the same -- to have a symmetric view of the inflation deviations.

Nevertheless, the specific features of Japan’s economic troubles may require more than a change in the monetary policy regime. The unconventional combination of unfavourable

³ According to the simulations, the frequency of encounters of interest rate constraints significantly increases from no more than 2% with nominal interest rate from 5% to even 20% with rate of interest at 2% levels (McCallum, 2001, p.27).

economic conditions requires unconventional solutions - quantitative monetary loosening by means of unsterilized foreign exchange interventions and unconventional market operations.

Though the Japanese central bank has not sterilised the recent interventions against the stronger yen to signal new vigour in its monetary easing, the signal lacks the credibility needed to defeat deflation. In February, the central bank supported the government's anti-inflation package by increasing the volume of monthly government bond purchases to one billion yen. It also gave up the request of commercial banks to deposit 10-15 billion yen into the central bank's current accounts. According to Krugman's estimation, monetary-easing via the purchase of long-term bonds, which decreases the long term yields, would require the purchase of hundreds of billions of yen (10-15% of GDP) over a period of several years. Short-term expansion would not persuade economic agents to increase inflation expectations. However, such a policy would not be sustained in view of massive quasi-fiscal expenditures. As I have already mentioned above, the strategy of unsterilised intervention against the yen is limited by almost the same quantitative constraints.

5. Conclusion

In conclusion, I would like to summarize the recommendations made about Japanese economic policy. Based on the above analysis of Japan's economic woes, an appropriate macroeconomic strategy can be specified. Such a strategy, which would take the Japanese economy out of the deflationary recession, is dependent upon broad economic policy measures.

Analysis indicates that short-lived fiscal or monetary expansion has proved to be ineffective. Temporary policy easing has no power to change individual expectations. The problem of the liquidity-trap requires "careless" monetary policy, which allows prices to grow. Such monetary policy has to be credible and the extent of monetary easing should be large. In my view, the inflation-targeting regime is one of the most appropriate monetary policy-regimes. As empirical cases indicate, this relatively modern regime generally increases credibility and transparency of monetary policy. However, the Bank of Japan has to adopt a relatively high inflation target comparable with historical development of Japanese inflation. According to estimations of errors in inflation measurement, the inflation target should not be set below roughly 2%. Nevertheless, the real interest rate at the level of -2% barely induces economic

recovery and forces households to increase spending. In a bid to convince individuals that the price level will rise in the future, the monetary authority should apply not only conventional measures but unconventional tools such as unsterilized foreign exchange interventions and monetary easing via the purchase of long-term government bonds as well. The role of such extraordinary measures is to demonstrate the resoluteness of the central bank retaining the easing policy stance.

Fiscal expansion should go hand-in-hand with the monetary policy-loosening help keep real interest-rates negative in the Japanese economy. Fiscal easing in the form of tax reduction, focusing not only on private consumption but also on investment activity, can be the best way to support monetary easing. As soon as the economy signals a rise in inflation expectations, monetary policy has to remain accommodating and allow inflation to grow at an appropriate level. Though such an economic-policy-mix would almost certainly cause the yen to weaken, the yen's devaluation alone would not solve Japan's problems!

I would like to stress that the power of macroeconomic policy should not be overrated. In conclusion, the Japanese economy suffers from deep microeconomic problems, particularly in the financial sector. The banking system is paralysed by a huge backlog of bad loans counting roughly 7% of the annual GDP. Structural and banking reforms are essential for a self-sustained recovery of Japan's economy.

Sources

1. Frait, J., Melecký, M., and Horská, H., (2002) recession, Deflation, Bank Crisis and Liquidity Trap in Japan. Prague, Politická ekonomie, 2, p. 263-280.
2. Goyal, V.K. – Yamada, T. (2000) Asset price Bubbles, Investment, and Liquidity: Evidence from Japan. NBER, 2000.
3. Krugman, P. (1999) Thinking about the Liquidity Trap. Paper for NBER/CEPR/TCER Conference in Tokyo, <http://web.mit.edu/krugman/www/trioshrt.html>.
4. KRUGMAN, P.R. (1998a) It's baaack! Japan's Slump and the Return of the Liquidity Trap. [Brookings Papers on Economic Activity, No. 2, p. 137-205.](http://web.mit.edu/krugman/www/brookings_papers_on_economic_activity_no_2_p_137-205)
5. KRUGMAN, P.R. (1998b) Japan: what went wrong? <http://web.mit.edu/krugman/www/japan.html>.
6. KRUGMAN, P.R. (1999a) Can deflation be prevented? <http://web.mit.edu/krugman/www/deflator.html>.
7. KRUGMAN, P.R. (1999b) Japan: still trapped. <http://web.mit.edu/krugman/www/japtrap2.html>.
8. KRUGMAN, P.R. (1999c): Japan's trap. <http://web.mit.edu/krugman/www/japtrap.html>.
9. Mc Callum, B.T. (2001) Inflation Targeting and Liquidity Trap. NBER, Working Paper, No. 8225, April 2001.
10. Obstfeld, M., and Rogoff, K. (1996), “ Foundation of International Macroeconomics”, in MIT Press, Massachusetts Institute of Technology, Cambridge, Massachusetts, London.
11. Walsh, C.E. (2000) Monetary Theory and Policy. MIT Press, London ISBN 0-262-23199-9.

During the asset price bubble, when stocks are overvalued, firms increase investment spending and contrawise they cut back when stocks are undervalued. The reason is that when stocks are overpriced, it becomes cheaper for firms to access external capital markets, which increases investment spending. Accordingly, the channel through which asset mispricing affects real investment is through its influence on the cost of financing; the cost of external financing declines when stock prices increase, and vice versa. This means that during the asset inflation period the investment spending diverges from the “g-theory”, which implies investment is a function of Tobin’s q ratio (the market value of assets divided by the replacement value of assets)

In line to this presumption, the stock market trend determined the aggregate trend of external financing in Japan during the bubble period in the late 1980s. The deregulation of Japanese debt market played also some role, as it allowed firms to disintermediate and led to an increase in equity-linked bond issue during the bubble period. The analyses (see e.g. Goyal 2000) suggest that the asset price bubble in Japan during the late 1980s significantly affected Japanese corporate investment spending during the period. In Japan during 1980s the loans to assets ratio declined for firms that could access public debt market, while for firms with no access to this financial market significantly increased.

There are many signs that banks preferred to lend against land and securities as collateral at the time of the bubble.

It is proved that during the asset inflation period, investment spending of bank-dependent firms, particularly, does not respond to fundamental valuations. In addition, the relatively bank-dependent firms face significantly greater liquidity constraints particularly during