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**Price Expectations and Consumption under Deflation:  
Evidence from Japanese Household Survey Data**

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Abstract

The Japanese economy has experienced price deflation since the mid-1990s. Despite the importance of overcoming deflation, there has been little recent research on price expectations in Japan. This paper takes advantage of an original and rich quarterly household-level data set from the “Kokumin Seikatsu Monitors” to estimate average price expectations, examine the factors that affect price expectations, and examine how changes in price expectations have affected household consumption.

Our estimates indicate that average price expectations ranged from minus 0.2 to zero percent in 2001 and 2002. However, there was an increase to 1 percent in the first quarter of 2003, followed by a decline to 0.2 percent in the second quarter, and a steady increase toward 0.8 percent by the first quarter of 2004. Price expectations depend on current price movements and lagged expectations. A series of quantitative easing monetary policies were not very effective in changing the price expectations, since the policy announcements caused revision of price expectations only for a small portion, i.e., 5-10% of people surveyed. The jump observed in the first quarter of 2003 was a reaction to the outbreak of the Iraq war.

Our study also confirms that deflationary expectations discourage household consumption, mainly durable consumption, by delaying the timing of purchases, suggesting that the deflationary expectations should be upwardly revised to restore a vital Japanese economy.

Keywords:

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1. INTRODUCTION

A decade has passed since the Japanese economy began to experience deflation in the middle of the 1990s (Figure 1). The growth of GDP deflator has been negative since 1994, except for an increase in 1997 that was due to an increase in the consumption tax rate. The CPI (excluding fresh foods) annual growth declined to zero percent in 1995 and has been negative since 1998. Although there are some signs of recovery in the Japanese economy, deflation is continuing. Expansionary fiscal and monetary policies in 1990s were not sufficient to check the decade-long deflation. For those who believe that deflation is harmful, further policy actions to stem the tide of declining prices are indispensable for the recovery of Japanese economy.

Deflation invites deflationary expectations and they in turn exacerbate deflation. Therefore, a remedy to check deflation should be drawn from analyses of the factors that reverse price expectations. Surprisingly, there has been little serious research on price-expectation formation in Japan. Moreover, Japanese monetary authorities are making policy choices without announcing (or even knowing) what current price expectations are. Most policy discussions in Japan have naïvely assumed *a priori* that price expectations are well approximated by current actual price changes. Although some studies in Japan tried to estimate price expectations using information from business surveys, they depend on a dated method by Carlson and Parkin (1975) that relies on strong and unrealistic assumptions about expectation formations.

In order to clarify price-expectation measures, this study takes advantage of a rich household level data set from the “Kokumin Seikatsu Monitors”(People’s Life Monitors in English, and henceforth “Monitor”) collected by the Cabinet Office from 2001 to 2004. We utilize this

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original data set to address the following three issues.

First, we use the Monitor's household-level data, which asked the respondents about their price expectations, to estimate price expectations. By averaging price expectations among respondents we directly calculate average price expectations without relying on strong assumptions. The calculated average price expectation series itself contains new information and may serve as a useful input for the design of monetary policies.

Second, we examine the factors that may affect price expectations. Since the Monitor's survey tracks the same households repeatedly, the panel structure of the data enables us to identify the factors that may affect price expectations. The survey contains numerous questions about household responses to changes in monetary policies, such as the introduction of quantitative easing, and responses to some exogenous shocks such as the outbreak of the Iraq War. The wide variety of questions in the Monitor survey thus enriches our analysis of price expectations.

Third, we address the consequences of a change in price expectations on household behavior. We will focus especially on the effect of price expectations on household consumption and savings. Deflationary expectations may loosen the budget constraints of households by increasing real income and stimulating consumption. On the other hand, if a household expects that deflation will continue in the future, the increase in real interest rates may deter the purchase of durable goods. Moreover, if a household combines deflationary expectations with anxiety about future business or employment conditions, deflationary expectations might discourage current consumption in general. Thus, empirical studies are needed to determine the directions in which price expectations may affect household consumption.

This paper is organized as follows. The next section reviews some related literature on price expectations in Japan. The third section describes the "Kokumin Seikatsu Monitors" and the data set used in this paper. We calculate quarterly average price expectations based on the micro-level data from the Monitor. The fourth section examines what changed price expectations, focusing on exogenous shocks such as monetary policies or changes in the international

environment. The fifth section evaluates how changes in price expectations affected household consumption. The final section concludes and discusses some policy implications drawn from our empirical analysis.

## 2. PRICE EXPECTATION MEASURES IN JAPAN

In striking contrast to countless studies on inflation, there have been relatively few studies of deflation in Japan until recently, partly because Japan had limited experience with deflation in the past. If we widen our scope of studies to price expectations in general, there are several strategies of research that have been proposed to measure price expectations.

The first strategy is to use inflation indexed bonds. This approach utilizes information from markets (see Kitamura, 1997, 2004), and the NIKKEI QUICK that started to provide price expectation series based on bond prices from the end of June 2004.<sup>2</sup> However, since an indexed bond issue in Japan was initiated in the March 2004 for the first time, we cannot therefore utilize the indexed bond information for longer periods.

The second strategy is to employ the expectation-augmented Phillips curve to derive a price-expectation series. Although this strategy has been widely adopted in US studies, where the estimated Phillips curve works well, Fukuda and Keida (2003) reported that the curve did not fit Japanese data well.<sup>3</sup>

The third and the most popular strategy in Japan is application of Carlson and Parkin (C-P) (1975), which derives an inflation expectation series using actual inflation and published aggregates from a survey of individual economic agents.<sup>4</sup> Although the C-P method needs information only on the directions of price expectations, it depends heavily on strong assumptions, such as normally

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<sup>2</sup> For the method of calculating price expectations from inflation indexed bond data, see Kitamura (2004).

<sup>3</sup> A merit of the expectation-augmented Phillips curve estimation is its application to measure structural changes in price expectations. Shimizutani and Yogi (2003) focus on an unusual experience in Okinawan history to evaluate the impact of devaluation on inflation expectations.

<sup>4</sup> Previous studies based on the Carlson-Parkin method are reviewed in Hori and Shimizutani (2003). Fukuda and Keida (2001) found that the performance of the estimated Phillips curve in Japan improves by adding the expectation term obtained from the C-P method.

distributed expectations, whose accuracy has never been seriously examined. Hori and Shimizutani (2003) concluded that the normality assumption, the core of the C-P method, is violated in Japan, using the same Monitor data set as is used in this paper.

The last and most obvious strategy is to directly ask respondents about their price expectations in a survey. Although this straightforward strategy has a long history in the United States, such as in the University of Michigan “Survey of Consumers” and the “Livingston Survey” of professional economists, and many US studies have examined price-expectation formation using these survey data,<sup>5</sup> it has not been seriously considered in Japan.

Since we believe the lack of a survey that directly collects price expectations has seriously hampered studies on price expectations in Japan, we will adopt a fourth strategy using a consumer survey approach, though it is still in the experimental stage. We hope that our survey based micro-level data set will further encourage research on Japanese price expectations.

### 3. DATA

The analyses of this paper utilize micro-level data from the “Kokumin Seikatsu Monitors” (Monitor). The Price Division of the Cabinet Office has monitors who answer timely questions about current policy issues related to price stability and national lifestyle. The sample size is about 2,400 for each survey and is allocated to each prefecture in proportion to its population size.<sup>6</sup> The sample is not randomly chosen: each prefecture publicly recruits voluntary respondents, paying attention to unbiased distribution in age, employment, and regions in each prefecture.<sup>7</sup> The voluntary paid participation of monitors motivates respondents to answer each survey to the best of their ability and results in the unusually high response rate of more than 90 percent.

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<sup>5</sup> Roberts (1998) used the two surveys to examine the formation of expectations and conclude that expectations are neither perfectly rational nor as unsophisticated as simple autoregressive models. More recent work by Carroll (2003) employs the Mankiw and Reis (2001, 2002) methodology to show empirically that household expectations are not rational.

<sup>6</sup> There are 47 prefectures in Japan.

<sup>7</sup> In general, the number of applicants is larger than that of openings. Each prefecture contracts with selected respondents to answer eight questionnaires and pays 12,000 yen (about US\$100) per year.

The questions related to price expectations were included in the Monitor survey twelve times between the second quarter of 2001 and the first quarter of 2004.<sup>8</sup> A monitor household is surveyed quarterly (March, June, September and December 1<sup>st</sup>). Although some households are dropped from the sample after one fiscal year, most of them remain in the sample in the following years, which enables us to construct a longer panel.

A notable feature of our Monitor data regarding price expectations comes from the fact that respondents are asked not only the directions of changes, which all other consumer surveys in Japan focused on, but also the size of changes in figures. By averaging the individual figures, we can directly derive the price expectation series without relying on any strong assumptions.

Apart from the basic questions that are illustrated in the next section, price-related questions cover the effect of changes in monetary policies (i.e., quantitative easing) and other exogenous shocks, such as the Iraq War, on price expectations. Income related questions cover employment and social security system uncertainties. Consumption related questions ask concrete reasons for increases or decreases in consumption for the past year and the next year. Debt related questions ask the burden of loan repayments out of monthly salary and the effect of deflation on the burden of debt.

Further, the Monitor survey covers detailed information on household characteristics such as head of household age, sex, employment status (industry if employed), residential status, family size, and annual income level. The basic statistics of the surveyed households are summarized in Table 1. The average age of the head of household, i.e., respondents or their spouses, is around 50. The average annual income is around 5.5 million yen, and about 90 percent of the survey respondents were female.

#### 4. AVERAGE PRICE EXPECTATIONS AMONG JAPANESE HOUSEHOLDS

In this section, we first calculate price expectations from the Monitor household-level data.

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<sup>8</sup> A pre-survey that contains similar questions was performed in the first quarter of 2001. The remaining four surveys are performed on an ad-hoc basis.

The exact wordings of the questions related to price expectations in the Monitor are as follows. Similar questions and answers are also provided for the perceptions of current prices compared with the previous year prices (henceforth, “current price”).

- (A) “During the next 12 months, do you think that prices of goods and services that you frequently purchase on a daily basis will go: (1) up, (2) remain the same, (3) down, or (4) uncertain?”
- (B) “If you answered ‘up’ or ‘down,’ how much (in figures) do you think the price level will change during the past 12 months?”
- (C) “If you cannot provide an actual number, please select from the following choices:
- |  |  |
|--|--|
| (1) less than 20 percent                 | (6) plus 0 percent to plus 2 percent   |
| (2) minus 10 percent to minus 20 percent | (7) plus 2 percent to plus 5 percent   |
| (3) minus 5 percent to minus 10 percent  | (8) plus 5 percent to plus 10 percent  |
| (4) minus 2 percent to minus 5 percent   | (9) plus 10 percent to plus 20 percent |
| (5) minus 0 percent to minus 2 percent   | (10) more than 20 percent.”            |

In what follows, we confine our sample to those who responded in actual figures, that is those who chose (2) in (A) or selected (1) or (3) in (A) and answered in (B).<sup>9</sup> Figure 1 shows the estimates of average price expectations based on the survey. Price expectations range from minus 0.2 percent to zero percent in 2001 and 2002. However, there is a sizable increase to 1 percent in the first quarter of 2003, followed by a decline to 0.2 percent in the second quarter and a steady increase toward the first quarter of 2004, which reached 0.8 percent. In contrast, the perception of current price was around minus 1.3 percent until the first quarter of 2002 and then gradually approached zero. Finally, it turned to positive in the last quarter of 2003 and reached one percent at the beginning of 2004. We should note that perception of current price closely follows the development of the CPI (bold line in the figure). That is, responses capture the actual trend in the

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<sup>9</sup> We also tried to calculate price expectations based on the median of multiple choices excluding (1) and (10), and found that the estimates based on the median of multiple choices are almost the same as those based on actual figures. We rely on the responses in (B) rather than (C) since it is difficult to justify why the median of each choice is taken and what figures should be allocated for choices (1) and (10). Therefore, our analyses will depend on the data obtained from the actual figures, and the responses to the multiple choices question are used just to exclude contradictory observations.

price developments quite well. We also observe that perception of current prices is always lower than price expectations. This might reflect that household price expectations always have an inflationary bias.<sup>10</sup>

In sum, we observed that deflationary expectations ranged from minus 0.2 percent to zero percent in 2001 and 2002. However, the deflationary trend was suspended by a rise in expectations up to 1 percent in the first quarter of 2003. Although a decline to 0.2 percent increase in the second quarter made the increase temporary, price expectations increased steadily to 0.8 percent to end the deflationary movement by the first quarter of 2004. Perception of current price, which mimics the developments of the aggregate CPI, was lower than estimated price expectations all the continually. This may suggest that household price expectations have an inflationary bias.

## 5. THE FACTORS THAT AFFECT PRICE EXPECTATIONS

Given the new measure of price expectations, we now turn to our second question, that is, what changes price expectations. More concretely, we focus on the effects of exogenous shocks such as monetary policies and changes in the international environment on price expectations. The panel structure of our data set enables us to investigate the formation of price expectations after controlling for the heterogeneity in households. Before running regressions to test what determines price expectations, we preview some important factors that are plausibly related to the formation of expectations.

First, price expectations should naturally depend on lagged expectations and current actual price developments. The correlation coefficient between price expectations and lagged expectations is 0.3, suggesting some inertia of price expectations; once deflationary expectations are generated, we observe that those expectations last for some time. The correlation between price

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<sup>10</sup> One might suspect that some sample changes are causing observed trends. To address this, we also plotted a figure based on the households that responded in all twelve surveys. The observed trends in Figure 3 are similar to those in Figure 2.

expectations and perception of current price movements is 0.5. This may reflect an adaptive aspect of household behavior in their expectation formation.

Second, income expectations or current income also may affect price expectations. The questions related to income have exactly the same structure as those of the price related questions explained above, including the multiple choices. Figure 4 describes the series on current income and income expectations. As can be seen, both of them have ranged from minus 1.5 to minus 3 percent. We should note that there is no “jump” in income in the first quarter of 2003 when a rise in price expectations is observed. In this sense, we cannot explain the increase in price expectation by income (or business condition) factors.

Third, we can consider the impacts from exogenous shocks including policy changes. Fortunately, the Monitor survey contains many questions about monitors’ responses to changes in monetary policy or to exogenous shocks such as the outbreak of the Iraq War.

Table 2 briefly summarizes the recent developments in Japanese monetary policy. Notably, the Bank of Japan has performed “quantitative easing” to increase the money supply to combat deflation since March 2001. The policy includes: (1) a change in the operating target of money market operations; (2) CPI guidelines for the duration of the new procedures; (3) an increase in the current-account balance at the Bank of Japan and declines in interest rates; and (4) an increase in outright purchases of long-term government bonds. The policy target was revised to expand in August, September and December, including a reduction in the official discount rate from 0.15 to 0.10. In 2002, the Bank began to consider a new policy package to purchase stocks directly from the market in September, and the operating target was revised again in October. The Bank began to examine the possible purchase of asset-backed securities and the operating goal was revised in April, May, and October 2003 and also in January 2004. These policies were new and indicated a regime change in Japanese monetary policy. However, as far as we know, there are no other studies that have seriously examined household reaction to those policy changes.

Figure 5 summarizes household responses to the monetary policy questions in the March 2002 Monitor survey. First, about half of the respondents knew about the content of current monetary policy.<sup>11</sup> However, out of those who were aware of the policy, the share of respondents who revised their price expectations was less than 10 percent. More than 60 percent answered there was no effect on their expectations and approximately 30 percent answered that they were not sure of the effects. Further, the survey asked the reasons for not reacting to the policy changes. About half of respondents answered that the quantitative easing policy cannot affect the economy, and about 10 percent answered the scale was too small; the remaining 40 percent answered that they did not understand the mechanism for the policy to work.

The Monitor survey also asked the respondents about their reactions to other types of exogenous shocks, such as the September 11th terrorist attack and the outbreak of the Iraq War, as reported in Figure 6. Regarding the September 11th attack, only 10 percent of respondents raised their expectations, roughly 40 percent did not change their expectations, and 20 percent lowered their expectations, probably according to their respective anticipation of future developments. On the other hand, the Iraq War raised the price expectations of more than half of the respondents, which is greater than in the cases of the monetary-policy change.

Based on our previews of factors to explain price expectations, we have run regressions with the following specifications to examine the relative importance of those factors:

$$P_{i,t+1}^e = \alpha_0 + \alpha_1 * P_{i,t}^e + \alpha_2 * P_{i,t} + \alpha_3 * Y_{i,t} + \alpha_4 * M_t + \alpha_5 * X_t + \alpha_6 * Macro_t + \alpha_7 * Z_{i,\tau} + \varepsilon_{i,t} \quad (1)$$

where  $P_{i,t+1}^e$  is a household's price expectation for time t+1, i.e., a quarter ahead.  $P_{i,t}$  is the current price change and  $Y_{i,t}$  is the current income change, both of which are perceived by a respondent household. A vector  $Macro_t$  contains the oil-price change and a composite index, or dummy variables for each quarter to control for macroeconomic factors. Another control vector,  $Z_{i,\tau}$ ,

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<sup>11</sup> The same questions were also asked in the second to fourth quarter in 2001, with similar results.

includes the age and squared age of head of households and the logarithm of annual household head income in fiscal year  $\tau$ .<sup>12</sup> The last notation is an error term.

Our main interests are the coefficients on  $M_{i,t}$  and  $X_{i,t}$ .  $M_{i,t}$  is a monetary policy related dummy variable at time  $t$  that takes two different forms: a dummy for those who knew each change in monetary policy right after those events (henceforth, “Knowledge Dummy”) and for those who actually revised their expectations (henceforth, “Revision Dummy”). As regards the “Knowledge Dummy”, the survey asked the respondents whether they knew the changes in monetary policy such as the four times implementation of quantitative easing in 2001. We allocated one for the respondent households if they answered they knew a policy change.<sup>13</sup> “Revision Dummy” takes one if a household changes its expectations in response to a certain policy change.  $X_{i,t}$  is a vector of dummy variables that corresponds to other exogenous shocks such as the September 11th terrorist attack in 2001 and the outbreak of the Iraq war in 2003. The dummies take one for respondents who revised their expectations in response to the exogenous shocks.<sup>14</sup>

Table 3 reports the regression results only with the “knowledge dummy.” We may first note that the coefficients both on current price and on lagged price expectations are positive and significant. In other words, price expectations had some elements of inertia of expectations and adaptive formation. In contrast, the estimated coefficients on current income are not significant in most cases and are much smaller than those on price factors.<sup>15</sup>

Although the above findings are suggestive for our understanding of expectation formation, what interests us most is the fact that the coefficients on the “Knowledge Dummy” are not significant in all cases of cross section regressions (columns <1> to <4>) and panel regressions (<5> and <6>). Consistent with the previews on household responses to policy changes reported in

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<sup>12</sup> The information on household characteristics are obtained once in every fiscal year.

<sup>13</sup> For the cases of the panel regressions below, we assume the same households, who once answered they knew a policy change, also knew the following changes, and allocate ones for them. This rule is also applied to the “Revision Dummy”.

<sup>14</sup> The survey assumes that all respondents knew about those exogenous events.

<sup>15</sup> This might be because the survey asks the respondents about their own income, rather than business conditions in the macroeconomic sense.

Figure 5, this finding implies that the knowledge of the implementation of policy changes does not necessarily lead to changes in price expectations. In other words, although about a half of all respondent households knew the regime change in monetary policies, they did not alter their expectations in response to their knowledge.

On the other hand, Table 4 shows the results based on the “Revision Dummy” for monetary policies and other exogenous shocks. The households in these regressions are those who knew the changes in monetary policies *and* answered that they raised their price expectations; and thus the coefficients on those dummies are expected to be positive and significant. We ran the “Revision Dummy” regressions to measure how much price expectations were revised in response to policy changes.

The cross-section results in Table 4 confirm our findings in Table 3 on the relative importance of current price changes, lagged price expectations and current income changes in the formation of price expectations. Moreover the estimated coefficients on the “Revision Dummies” in response to each monetary policy announcement are positive and significant, though the magnitude of those policy impacts decreases as time changes. To our surprise, the noticeable change of the BOJ governor (from Mr. Hayami to Mr. Fukui) raised price expectations of respondents only insignificantly. In contrast, the coefficients on dummy variables of the September 11th terrorist attack and of the Iraq war are significantly positive.

Table 5 reports the results of panel regressions that pool the cross-section data after controlling for macroeconomic variation. Most of our findings based on the cross-section regressions above are reconfirmed in these panel regressions. First, the coefficients on the “Revision Dummy” at the introduction of quantitative easing (in March 2001) are significant and large with a magnitude of 0.8 - 0.9 percentage points. For the second and third episodes of quantitative easing in August and September 2001, the estimated coefficients decline to about 0.3 - 0.4 percent, although they are still statistically significant in general. The coefficients on “Revision Dummies” in the later episodes are not significant.

If we focus on the effects of monetary policies other than quantitative easing, the effects of the purchase of asset-backed securities were significantly positive in most cases. However, we see no significant effects from the new initiative toward financial system stability or from the change of governor from Mr. Hayami to Mr. Fukui.

As regards other exogenous shocks, the coefficients on the September 11th attack and the Iraq war are positive and significant with coefficients of 1.2 to 1.5. An interesting finding from our regression exercises is the coefficient on the time dummy for the first quarter of 2003 (results are omitted). Reflecting the 2003 first quarter hike of price expectations observed in Figure 2, the estimated coefficient on that time dummy is large and significant in the regression without the Iraq War “Revision Dummy.” However, the magnitude of the coefficient is much smaller if we include the Iraq war dummy, indicating that the increase observed in the first quarter of 2003 was caused by the household responses to the outbreak of Iraq war.

In summary, we have found that current price developments and lagged price expectations contribute to form price expectations. Current income does not have strong explanatory power. Knowledge of the implementation of the quantitative easing policies did not necessarily lead to upward revisions of price expectations. However, the policy was marginally effective in the sense that it could raise the expectations of those who knew about the policy and actually revised their expectations by more than one percent in response to the early policy implementations. Other exogenous shocks such as the terrorist attack and the war in Iraq also influenced price expectations. The temporary surge of price expectations in the first quarter of 2003 was attributable to those shocks, especially that of the Iraq war.

## 6. THE EFFECT OF DEFLATIONARY EXPECTATIONS ON CONSUMPTION

In this section, we address the consequences of a change in price expectations on household behavior. We especially focus on the effect of deflationary expectations on household consumption. Deflationary expectations loosen a household’s budget constraint and may stimulate

consumption. On the other hand, if a household anticipates that deflation will continue in the future, it may deter the purchase of durable goods, which dampens current consumption. Moreover, if a household combines deflationary expectations with a pessimistic view of the economy, deflationary expectations might discourage current consumptions.<sup>16</sup> Thus, only empirical studies can clarify the direction in which price expectations affect household consumption.

In addition to the evaluation of the effect of deflationary expectations on consumption, we consider what types of goods are most affected by price expectations. We also examine the differences in the effects for households with and without any debt to address the possibility that deflationary expectations raise the real debt burden that discourages consumption. In what follows, we estimate consumption functions with the following specifications to examine the effect of price expectations on household consumption.

$$C_{it} = \alpha_0 + \alpha_1 * Y_{i,t+1}^e + \alpha_2 * Y_{i,t} + \alpha_3 * P_{i,t+1}^e + \alpha_4 * D_{it} + \alpha_5 * Risk_{it} + \alpha_6 * X_{it} + \alpha_7 * Time + \varepsilon_{i,t}$$

and

$$C_{it+1}^e = \alpha_0 + \alpha_1 * Y_{i,t+1}^e + \alpha_2 * Y_{i,t} + \alpha_3 * P_{i,t+1}^e + \alpha_4 * D_{it} + \alpha_5 * Risk_{it} + \alpha_6 * X_{it} + \alpha_7 * Time + \varepsilon_{i,t+1}. \quad (2)$$

The dependent variables are consumption over the past year ( $C_{it}$ ) or expected consumption over the next year ( $C_{it+1}^e$ ), respectively. The explanatory variables include current income, or income over the past year ( $Y_{it}$ ), income expectations, or expected income over the next year ( $Y_{it+1}^e$ ), and price expectations over the next year ( $P_{it+1}^e$ ). In addition, there are the debt-repayment ratio to income or a dummy for a household with any debt ( $D_{it}$ ) and risk perceptions dummies ( $Risk_{it}$ ) of unemployment and of unsound social pension system, respectively.  $X_{it}$  consists of a variety of dummy variables to control for a household's demographics such as change in family size, change in the number of workers in a household, change in tenancy status (renter to owner or vice versa), a squared age of head of household, and the logarithm of head of household annual income. The

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<sup>16</sup> The relationship between deflation, the household balance sheet and consumption was discussed by Mishkin (1977, 1978).

regression model also includes time dummies for each period from the second quarter of 2001 to the second quarter of 2003.

Table 6 reports the estimation results. First, if we use current consumption, or consumption over the past year, as our dependent variable, the coefficients on current income and on income expectations over the next year are both positive and statistically significant. The estimated size of the coefficient is larger for the current income term. The coefficients on price expectations are also positive and significant. In other words, deflationary expectations discourage consumption.

What we find in our current consumption regressions generally holds even when we use the consumption prospects, or consumption over the next year, as our dependent variable, that is, the coefficients on current consumption and income expectations remain positive and significant. What is more interesting are the coefficients on the interaction term between price expectations and the debt-payment dummy. Large and significantly positive coefficients on the interaction term imply that price expectations affect future consumption for those who are in debt. In other words, deflationary expectations dampen future consumption by raising the debt burden.

We next examine the types of goods that are most likely affected by price expectations. Here, we use the following Monitor survey questions and focus on durable consumption:

“Do you plan to purchase more durables over the next year relative to the past year? Please select from the following choices:

- |                      |                     |
|----------------------|---------------------|
| (1) plan to buy more | (2) remain the same |
| (3) plan to buy less | (4) uncertain.”     |

By allocating one for the choice (1), zero for the choice (2), and minus one for the choice (3), we set up a sort of dummy variable to be used as a dependent variable in ordered probit estimations.

As explanatory variables, we follow the specification of regression (2) above. The regression results are reported on the left hand side of Table 7. The coefficient estimates of the probit regression basically replicate the simple OLS regressions in Table 6. The coefficients on

current income and expected income are positive and significant. Concern for the risk of unemployment clearly discourages durables goods purchase. Price expectations stimulate respondents to buy more durable goods, or in other words, deflationary expectations discourage household consumption of durables by delaying the timing of purchase.

## 7. CONCLUSION

This paper uses an original and rich quarterly household-level dataset from “Kokumin Seikatsu Monitors” to estimate average price expectations, examine the factors that affect price expectations, and consider how changes in price expectations affect household consumption.

Our estimates indicate that average price expectations ranged from minus 0.2 to zero percent in 2001 and 2002, increased to 1 percent in the first quarter of 2003, declined to 0.2 percent in the second quarter, and showed a steady increase toward 0.8 percent by the first quarter of 2004. Price expectations depend on current price movements and lagged expectations. A series of quantitative easing monetary policies were not very effective in changing the price expectations, since the policy announcements caused revision of price expectations only for a small proportion, 5-10%, of people surveyed. The increase observed in the first quarter of 2003 was a reaction to the outbreak of the Iraq war. Our study also confirms that deflationary expectations discourage household consumption, mainly durable consumption, by delaying the timing of purchase.

The findings of this paper thus suggest that deflationary expectations have to be revised upward to stimulate household consumption. However, quantitative easing measures were not very effective in changing price expectations. Accordingly, policy authorities need to implement policies to change expectations in a more aggressive and understandable way for general public for there to be any significant impact on household behavior.

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**Table 1. Basic Characteristics of the Monitors (Persons Surveyed) and Household Heads**

	Obs	Mean	Std. Dev.	Min	Max
Age of the Person Surveyed	27,520	48.41	12.87	20	80
Sex of the Person Surveyed (Male=1)	27,468	0.11	0.31	0	1
Age of Household Head	27,432	51.13	12.87	20	93
Sex of Household Head (Male=1)	27,432	0.90	0.30	0	1
Annual Income of Household Head (10 thousand yen)	27,376	546.48	327.81	50	2,500
Number of Family Members	27,488	3.50	1.36	1	6
Distribution of Family Type					
Single Household Dummy	27,456	0.03	0.18	0	1
Married Couple (without Children) Household Dummy	27,456	0.23	0.42	0	1
Two Generation Household Dummy	27,456	0.55	0.50	0	1
Three Generation Household Dummy	27,456	0.16	0.37	0	1
Other Household Dummy	27,456	0.03	0.16	0	1
Distribution of Residence Type					
Own House Dummy	27,508	0.83	0.38	0	1
Rental House Dummy	27,508	0.12	0.33	0	1
Company House Dummy	27,508	0.03	0.18	0	1
Other House Dummy	27,508	0.01	0.12	0	1

Note: This table is based on the sample from the second quarter of 2001 to the first quarter of 2004.

**Table 2. Changes in Monetary Policy from 2001 to the First Quarter of 2004**

Year	Month	Changes in Monetary Policy
2001	19, Mar.	New Procedures for Money Market Operations and Monetary Easing [**] Change in the operating target for money market operations CPI guidelines for the duration of the new procedures Increase in the current-account balance at the Bank of Japan (5 trillion yen) and declines in interest rates (0.15%) Increase in outright purchase of long-term government bonds (400 billion yen)
2001	14, Aug.	Change in the Guideline for Money Market Operations [**] Increase in the current-account balance at the Bank of Japan (6 trillion yen) Increase in outright purchase of long-term government bonds (600 billion yen)
2001	18, Sep.	Change in the Guideline for Money Market Operations and Reduction in the Official Discount Rate [**] Change in the operating target for money market operations (above 6 trillion yen) Declines in interest rates (0.10%)
2001	19, Dec.	Change in the Guideline for Money Market Operations [**] Change in the operating target for money market operations (10 - 15 trillion yen) Increase in outright purchase of long-term government bonds (800 billion yen)
2002	28, Feb.	On Today's Decision at the Monetary Policy Meeting Change in the operating target for money market operations for the end of year Increase in outright purchase of long-term government bonds (1 trillion yen)
2002	18, Sep.	Introduction of "the Purchase/Sale of Japanese Government Securities with Repurchase Agreements" [*]
2002	30, Oct.	Change in the Guideline for Money Market Operations [*] (echoed with Government's Policy Package) Change in the operating target for money market operations (15 - 20 trillion yen) Increase in outright purchase of long-term government bonds (1.2 trillion yen)
2002	17, Dec.	Measures to Faciliate Smooth Corporate Financing
2003	20, March	Change of the Governor (from Hayami to Fukui)
2003	25, Mar.	On Today's Decision at the Monetary Policy Meeting Change in the operating target for money market operations (17 - 22 trillion yen) Increase in outright purchase of long-term government bonds (1 trillion yen)
2003	8, Apr.	Examination of Possible Purchase of Asset-Backed Securities [*]
2003	30, Apr.	Change in the Guideline for Money Market Operations [*] Change in the operating target for money market operations (22 - 27 trillion yen)
2003	20, May	Change in the Guideline for Money Market Operations Change in the operating target for money market operations (27 - 30 trillion yen)
2003	11, Jun.	Purchase of Asset-Backed Securities
2003	12, Sep.	Review of Extending Maturities of the Purchase/Sale of Japanese Government Securities with Repurchase Agreements
2003	10, Oct.	Enhancement of Monetary Policy Transparency On Today's Decision at the Monetary Policy Meeting Change in the operating target for money market operations (27 - 32 trillion yen)
2003	16, Dec.	Review of the Conditions regarding the Purchase of Asset-Backed Securities
2004	20, Jan.	Changes in the Guideline for Money Market Operations Change in the operating target for money market operations (30 - 35 trillion yen) Modification of the Conditions regarding the Purchase of Asset-Backed Securities
2004	26, Feb.	Study of the Introduction of a Facility to Enhance Liquidity of Japanese Government Securities Markets

Note: Data source is the BOJ's web ([www.boj.or.jp/en/seisaku](http://www.boj.or.jp/en/seisaku)).

[\*\*] refers to all cases to construct both "knowledge dummy" and "revision dummy" and [\*] does to those to make "revision dummy".

**Table 3. Determinants of Price Expectations (Knowledge Dummy)**

Dependent Variable: Price Change Expectations (t)	Cross-Section Regressions				Panel Regressions	
	<1>	<2>	<3>	<4>	<5>	<6>
Current Price Change (t)	0.379 *** [ 0.039 ]	0.291 *** [ 0.021 ]	0.177 *** [ 0.025 ]	0.382 *** [ 0.024 ]	0.317 *** [ 0.008 ]	0.314 *** [ 0.008 ]
Lagged Price Change Expectation (t-1)	0.111 ** [ 0.054 ]	0.249 *** [ 0.028 ]	0.341 *** [ 0.036 ]	0.157 *** [ 0.030 ]	0.228 *** [ 0.011 ]	0.230 *** [ 0.011 ]
Current Income Change (t)	0.016 [ 0.017 ]	0.010 [ 0.011 ]	-0.005 [ 0.012 ]	0.035 *** [ 0.012 ]	0.007 * [ 0.004 ]	0.007 * [ 0.004 ]
Dummy Variable (Know=1)						
Quantitative Easing (Mar., 2001)	0.386 [ 0.329 ]				0.159 [ 0.136 ]	0.135 [ 0.139 ]
Quantitative Easing (Aug., 2001)		0.085 [ 0.175 ]			-0.100 [ 0.153 ]	-0.105 [ 0.161 ]
Quantitative Easing (Sep., 2001)			-0.176 [ 0.224 ]		0.161 [ 0.127 ]	0.082 [ 0.144 ]
Quantitative Easing (Dec., 2001)				0.081 [ 0.217 ]	-0.092 [ 0.101 ]	0.090 [ 0.108 ]
Macro Factors						
Oil Price Change					0.006 *** [ 0.002 ]	
Composite Index					0.000 [ 0.008 ]	
Time Dummies	no	no	no	no	no	yes
Number of obs	201	873	799	788	6699	6699
Adj R-squared	0.3534	0.2748	0.1893	0.2926	0.2643	0.2703
Root MSE	2.3034	2.5641	3.1416	2.9255	2.5399	2.5295
Estimation Periods	Jun-01	Sep-01	Dec-01	Mar-02	From 2001.2Q To 2004. 1Q	From 2001.2Q To 2004. 1Q

**Table 4. Determinants of Price Expectations (Revision Dummy): Cross-Section Regressions**

Dependent Variable: Price Expectations (t) (Change for the next year)	Cross Sectional Regressions						Cross Sectional Regressions					
	<1>	<2>	<3>	<4>	<5>	<6>	<7>	<8>	<9>	<10>	<11>	<12>
Current Price Change (t)	0.371 *** [ 0.038 ]	0.284 *** [ 0.021 ]	0.179 *** [ 0.025 ]	0.388 *** [ 0.023 ]	0.269 *** [ 0.024 ]	0.312 *** [ 0.024 ]	0.336 *** [ 0.016 ]	0.274 *** [ 0.024 ]	0.309 *** [ 0.024 ]	0.401 *** [ 0.029 ]	0.175 *** [ 0.025 ]	0.392 [ 0.029 ]
Lagged Price Change Expectation (t-1)	0.084 [ 0.052 ]	0.247 *** [ 0.028 ]	0.314 *** [ 0.035 ]	0.147 *** [ 0.030 ]	0.237 *** [ 0.027 ]	0.135 *** [ 0.022 ]	0.342 *** [ 0.021 ]	0.238 *** [ 0.027 ]	0.135 *** [ 0.022 ]	0.212 *** [ 0.041 ]	0.314 *** [ 0.035 ]	0.212 [ 0.040 ]
Current Income Change (t)	0.011 [ 0.016 ]	0.010 [ 0.010 ]	-0.005 [ 0.012 ]	0.035 *** [ 0.012 ]	-0.005 [ 0.009 ]	-0.006 [ 0.010 ]	-0.003 [ 0.006 ]	-0.005 [ 0.009 ]	-0.005 [ 0.010 ]	0.008 [ 0.013 ]	-0.004 [ 0.012 ]	0.011 [ 0.012 ]
Dummy Variable (in response to each Policy Announcement)												
Quantitative Easing (Mar.19, 2001)	2.962 *** [ 0.776 ]											
Quantitative Easing (Aug.14, 2001)		1.662 *** [ 0.509 ]										
Quantitative Easing (Sep.18, 2001)			1.724 *** [ 0.488 ]									
Quantitative Easing (Dec.19, 2001)				1.355 *** [ 0.506 ]								
Quantitative Easing (Oct.30, 2002)					0.620 * [ 0.338 ]							
Quantitative Easing (Apr.30, 2003)						0.716 ** [ 0.360 ]						
Quantitative Easing (Oct.10, 2003)							0.628 *** [ 0.235 ]					
New Initiative Toward Financial System Stability (Sep.18, 2002)								0.794 ** [ 0.399 ]				
Examination of Purchase of Asset-Backed Securities (Apr.8, 2003)									0.676 * [ 0.388 ]			
Change of the Governor (Hayami to Fukui) (Mar.20, 2003)										0.463 [ 0.469 ]		
Dummy Variable												
Terrorist Attack (Sep.11, 2001)											1.651 *** [ 0.367 ]	
Iraq War (Mar.20, 2003)												1.317 *** [ 0.200 ]
Number of obs	201	876	802	793	924	662	1856	924	662	893	802	893
Adj R-squared	0.3939	0.2834	0.1966	0.307	0.2204	0.2706	0.3571	0.2209	0.2695	0.2225	0.2042	0.2577
Root MSE	2.2301	2.5445	3.1256	2.9446	2.314	2.034	2.2318	2.3133	2.0355	3.0578	3.1108	2.9878
Estimation Periods	Jun-01	Sep-01	Dec-01	Mar-02	Dec-02	Jun-03	Dec-03 Mar-04	Dec-02	Jun-03	Mar-03	Dec-01	Mar-03

**Table 4 (continued) Determinants of Price Expectations (Revision Dummy): Panel Regressions**

Dependent Variable: Price Expectations (t) (Change for the next year)	Panel Regressions (2001. 2Q-2004.1Q)					
	<13>	<14>	<15>	<16>	<17>	<18>
Current Price Change (t)	0.304 *** [ 0.010 ]	0.304 *** [ 0.010 ]	0.300 *** [ 0.009 ]	0.301 *** [ 0.009 ]	0.301 *** [ 0.009 ]	0.300 *** [ 0.009 ]
Lagged Price Change Expectation (t-1)	0.212 *** [ 0.012 ]	0.211 *** [ 0.012 ]	0.212 *** [ 0.012 ]	0.214 *** [ 0.012 ]	0.214 *** [ 0.012 ]	0.213 *** [ 0.012 ]
Current Income Change (t)	0.008 * [ 0.004 ]	0.007 * [ 0.004 ]	0.008 * [ 0.004 ]			
Dummy Variable (in response to each Policy Announcement)						
Quantitative Easing (March 19, 2001)	0.886 *** [ 0.187 ]	0.881 *** [ 0.187 ]	0.850 *** [ 0.185 ]	0.861 *** [ 0.186 ]	0.856 *** [ 0.186 ]	0.839 *** [ 0.186 ]
Quantitative Easing (August 14, 2001)	0.411 * [ 0.230 ]	0.376 [ 0.231 ]	0.349 [ 0.229 ]	0.406 * [ 0.229 ]	0.379 * [ 0.230 ]	0.351 [ 0.229 ]
Quantitative Easing (September 18, 2001)	0.412 *** [ 0.159 ]	0.382 ** [ 0.160 ]	0.271 [ 0.160 ]	0.406 ** [ 0.159 ]	0.382 ** [ 0.160 ]	0.263 * [ 0.160 ]
Quantitative Easing (December 19, 2001)	0.326 [ 0.203 ]	0.325 [ 0.203 ]	0.290 [ 0.202 ]	0.379 * [ 0.203 ]	0.375 * [ 0.203 ]	0.329 [ 0.203 ]
Quantitative Easing (October 30, 2002)	-0.072 [ 0.228 ]	-0.312 [ 0.261 ]	-0.303 [ 0.259 ]	-0.085 [ 0.227 ]	-0.296 [ 0.261 ]	-0.309 [ 0.260 ]
Quantitative Easing (April 30, 2003)	0.390 [ 0.281 ]	0.043 [ 0.324 ]	0.070 [ 0.321 ]	0.407 [ 0.280 ]	0.070 [ 0.323 ]	0.080 [ 0.322 ]
Quantitative Easing (October 10, 2003)	0.556 [ 0.358 ]	0.451 [ 0.361 ]	0.441 [ 0.358 ]	0.494 [ 0.360 ]	0.390 [ 0.363 ]	0.412 [ 0.361 ]
New Initiative Toward Financial System Stability (September 18, 2002)		0.388 [ 0.259 ]	0.344 [ 0.257 ]		0.360 [ 0.259 ]	0.343 [ 0.258 ]
Examination of Purchase of Asset-Backed Securities (April 8, 2003)		0.618 * [ 0.333 ]	0.663 ** [ 0.331 ]		0.636 * [ 0.332 ]	0.660 ** [ 0.330 ]
Change of the Governor (Hayami to Fukui) (March 20, 2003)		0.137 [ 0.224 ]	0.002 [ 0.223 ]		0.035 [ 0.224 ]	-0.008 [ 0.223 ]
Dummy Variable						
Terrorist Attack (September 11, 2001)			1.347 *** [ 0.379 ]			1.210 *** [ 0.391 ]
Iraq War (March 20, 2003)			1.538 *** [ 0.183 ]			1.403 *** [ 0.229 ]
Macro Factors						
Oil Price Change	0.006 *** [ 0.002 ]	0.006 *** [ 0.002 ]	-0.001 [ 0.002 ]			
Composite Index	0.009 [ 0.008 ]	0.007 [ 0.008 ]	0.019 [ 0.008 ]			
Time Dummies	no	no	no	yes	yes	yes
Number of obs	5220	5220	5220	5220	5220	5220
Adj R-squared	0.2556	0.2561	0.2679	0.2615	0.2619	0.2682
Root MSE	2.5082	2.5074	2.4873	2.4982	2.4975	2.4868

**Table 5. Estimates of Consumption Functions**

	Current Consumption (t)						Expected Consumption (t+1)					
	OLS		random effects		fixed effects		OLS		random effects		fixed effects	
Current Consumption							0.449***	0.447***	0.398***	0.398***	0.314***	0.315***
Current Income	0.206***	0.206***	0.185***	0.185***	0.185***	0.185***	-0.002	-0.002	-0.003	-0.003	0.001	0.001
Income Expectation	0.033**	0.033**	0.033**	0.033**	0.005	0.005	0.151***	0.152***	0.158***	0.159***	0.154***	0.154***
Current Price change	0.112***	0.110***	0.074**	0.074**	0.047	0.047	-0.024	-0.029	-0.043	-0.045*	-0.082**	-0.082**
Price Expectation (X)	0.137***	0.090**	0.099**	0.093**	0.061	0.111**	0.127***	0.037	0.131***	0.046	0.122***	0.043
(X) * (Y)		0.146**		0.019		-0.155*		0.272***		0.261***		0.233***
Debt Repayment dummy (Y)	0.215	0.187	-0.0003	-0.003	-0.121	-0.090	0.138	0.091	-0.010	-0.053	0.077	-1.194***
Risk to be unemployed	-0.588**	-0.593**	-0.359	-0.360	0.552	0.550	-0.711***	-0.725***	-0.872***	-0.879***	-1.201**	-0.294
Concerns about social sec. & pens	-0.084	-0.076	-0.132	-0.130	-0.204	-0.203	-0.102	-0.081	-0.243	-0.225	-0.298	0.346
Change in Family Members	0.850**	0.848**	0.744*	0.744*	0.690	0.685	-0.011	-0.008	0.003	0.010	0.335	2.281*
Purchase of residence	3.882***	3.839***	3.459***	3.453***	2.924**	2.978**	1.841	1.782	2.079*	1.990*	2.402*	0.002
Head of Household Income	0.394**	0.389**	0.409***	0.409*	0.493	0.477	-0.212	-0.223	-0.059	-0.066	-0.001	0.315
Head of Household Age	0.032	0.032	0.023	0.023	-0.472	-0.461	0.011	0.011	0.022	0.022	0.333	-0.003
Head of Household Age (Squared)	-0.001	-0.001	-0.001	-0.001	0.005	0.004	-0.001	-0.001	-0.001	-0.001	-0.003	
Adj R-squared	0.0792	0.083			0.0492	0.0501	0.2911	0.2968			0.1630	0.1655
Root MSE	8.0421	8.0398					6.8937	6.8819				
Number of obs.	5922	5922	5922	5922	5922	5922	5479	5479	5479	5479	5479	5479
Wald chi2			391.67	392.07					1767.32	1790.45		

Note: All regressions include time dummies for each period, whose results are omitted.

Table 5 (continued)

	Current Consumption (t)					
	OLS		random effects		fixed effects	
Current Consumption						
Current Income	0.206*** (0.014)	0.206*** (0.014)	0.185*** (0.014)	0.185*** (0.014)	0.185*** (0.018)	0.185*** (0.018)
Income Expectation	0.033** (0.016)	0.033** (0.016)	0.033** (0.016)	0.033** (0.016)	0.005 (0.020)	0.005 (0.020)
Current Price change	0.112*** (0.029)	0.110*** (0.029)	0.074** (0.029)	0.074** (0.029)	0.047 (0.037)	0.047 (0.037)
Price Expectation (X)	0.137*** (0.037)	0.090** (0.044)	0.099** (0.038)	0.093** (0.043)	0.061 (0.047)	0.111** (0.054)
(X) * (Y)		0.146** (0.069)		0.019 (0.068)		-0.155* (0.081)
Debt Repayment dummy (Y)	0.215 (0.238)	0.187 (0.239)	-0.0003 (0.242)	-0.003 (0.243)	-0.121 (0.308)	-0.090 (0.308)
Risk to be unemployed	-0.588** (0.255)	-0.593** (0.254)	-0.359 (0.273)	-0.360 (0.273)	0.552 (0.389)	0.550 (0.389)
Concerns about social sec. & pens	-0.084 (0.261)	-0.076 (0.260)	-0.132 (0.268)	-0.130 (0.268)	-0.204 (0.358)	-0.203 (0.357)
Change in Family Members	0.850** (0.419)	0.848** (0.419)	0.744* (0.392)	0.744* (0.392)	0.690 (0.452)	0.685 (0.452)
Purchase of residence	3.882*** (1.318)	3.839*** (1.318)	3.459*** (1.213)	3.453*** (1.214)	2.924** (1.360)	2.978** (1.360)
Head of Household Income	0.394** (0.184)	0.389** (0.184)	0.409*** (0.220)	0.409* (0.220)	0.493 (0.549)	0.477 (0.549)
Head of Household Age	0.032 (0.069)	0.032 (0.069)	0.023 (0.086)	0.023 (0.086)	-0.472 (0.349)	-0.461 (0.349)
Head of Household Age (Squared)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	0.005 (0.003)	0.004 (0.003)
Adj R-squared	0.0792	0.083			0.0492	0.0501
Root MSE	8.0421	8.0398				
Number of obs.	5922	5922	5922	5922	5922	5922
Wald chi2			391.67	392.07		

Note: All regressions include time dummies for each period, whose results are omitted.

Table 5 (continued)

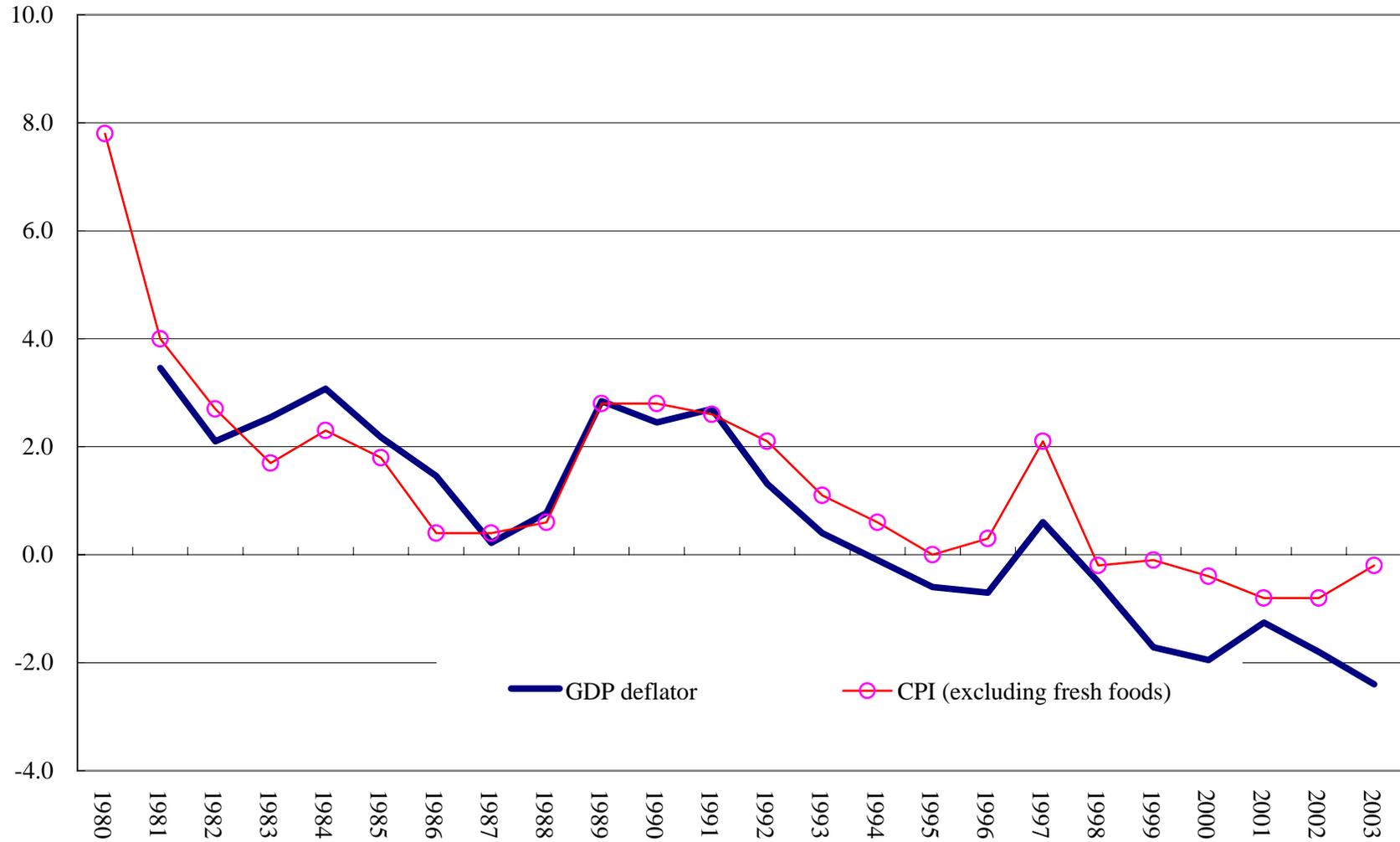
	Expected Consumption (t+1)					
	OLS	random effects		fixed effects		
Current Consumption	0.449*** (0.012)	0.447*** (0.011)	0.398*** (0.012)	0.398*** (0.012)	0.314*** (0.015)	0.315*** (0.015)
Current Income	-0.002 (0.013)	-0.002 (0.013)	-0.003 (0.013)	-0.003 (0.013)	0.001 (0.016)	0.001 (0.016)
Income Expectation	0.151*** (0.014)	0.152*** (0.014)	0.158*** (0.014)	0.159*** (0.014)	0.154*** (0.019)	0.154*** (0.019)
Current Price change	-0.024 (0.026)	-0.029 (0.026)	-0.043 (0.026)	-0.045* (0.026)	-0.082** (0.033)	-0.082** (0.033)
Price Expectation (X)	0.127*** (0.033)	0.037 (0.039)	0.131*** (0.034)	0.046 (0.039)	0.122*** (0.043)	0.043 (0.049)
(X) * (Y)		0.272*** (0.061)		0.261*** (0.061)		0.233*** (0.073)
Debt Repayment dummy (Y)	0.138 (0.212)	0.091 (0.212)	-0.010 (0.218)	-0.053 (0.218)	0.077 (0.282)	-1.194*** (0.355)
Risk to be unemployed	-0.711*** (0.227)	-0.725*** (0.227)	-0.872*** (0.244)	-0.879*** (0.244)	-1.201** (0.355)	-0.294 (0.328)
Concerns about social sec. & pens	-0.102 (0.233)	-0.081 (0.233)	-0.243 (0.242)	-0.225 (0.241)	-0.298 (0.329)	0.346 (0.410)
Change in Family Members	-0.011 (0.370)	-0.008 (0.370)	0.003 (0.352)	0.010 (0.351)	0.335 (0.411)	2.281* (1.319)
Purchase of residence	1.841 (1.262)	1.782 (1.260)	2.079* (1.182)	1.990* (1.180)	2.402* (1.320)	0.002 (0.498)
Head of Household Income	-0.212 (0.163)	-0.223 (0.163)	-0.059 (0.192)	-0.066 (0.192)	-0.001 (0.498)	0.315 (0.309)
Head of Household Age	0.011 (0.061)	0.011 (0.061)	0.022 (0.075)	0.022 (0.075)	0.333 (0.309)	-0.003 (0.003)
Head of Household Age (Squared)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.003 (0.003)	
Adj R-squared	0.2911	0.2968			0.1630	0.1655
Root MSE	6.8937	6.8819				
Number of obs.	5479	5479	5479	5479	5479	5479
Wald chi2			1767.32	1790.45		

Note: All regressions include time dummies for each period, whose results are omitted.

**Table 6. The Effect of Price Expectations on Durable Goods Purchase**

	Ordered probit model		Probit model (marginal effects)	
	Durable Consumption Prospect (1:Increase,0:No Change,-1:Decrease)		Timing of Consumption (1: Postpone, 0: Others)	
Current Income	0.008*** (0.002)	0.008*** (0.002)	0.0001 (0.003)	0.0001 (0.0002)
Income Expectation	0.011*** (0.002)	0.011*** (0.002)	-0.001** (0.0003)	-0.006** (0.003)
Current Price change	0.005 (0.004)	0.006 (0.004)	0.001 (0.001)	0.001 (0.001)
Price Expectation (X)	0.007 (0.005)	0.013** (0.006)	-0.011*** (0.001)	-0.010*** (0.001)
(X) * (Y)		-0.020* (0.010)		-0.002* (0.001)
Debt Repayment dummy (Y)	-0.118*** (0.034)	-0.115*** (0.034)	0.013** (0.005)	0.009* (0.005)
Risk to be unemployed	-0.119*** (0.037)	-0.119*** (0.037)	0.004 (0.005)	0.004 (0.005)
Concerns about social sec. & pension	-0.260*** (0.037)	-0.261*** (0.037)	0.007 (0.005)	0.008 (0.005)
Change in Family Members	0.010 (0.060)	0.010 (0.060)	-0.013** (0.007)	-0.013** (0.007)
Purchase of residence	0.155 (0.204)	0.164 (0.204)		
Head of Household Income	0.081*** (0.027)	0.082** (0.027)	-0.002 (0.003)	-0.002 (0.003)
Head of Household Age	-0.035*** (0.010)	-0.036*** (0.010)	-0.002** (0.001)	-0.002** (0.001)
Head of Household Age (Squared)	0.0003*** (0.0001)	0.0002*** (0.0001)	0.00002** (0.00001)	0.00002** (0.00001)
Pseudo R2	0.0280	0.0284	0.2882	0.2901
Log likelihood	-5149.8069	-5147.9684	-583.74824	-582.21703
Number of obs.	6042	6042	4612	488

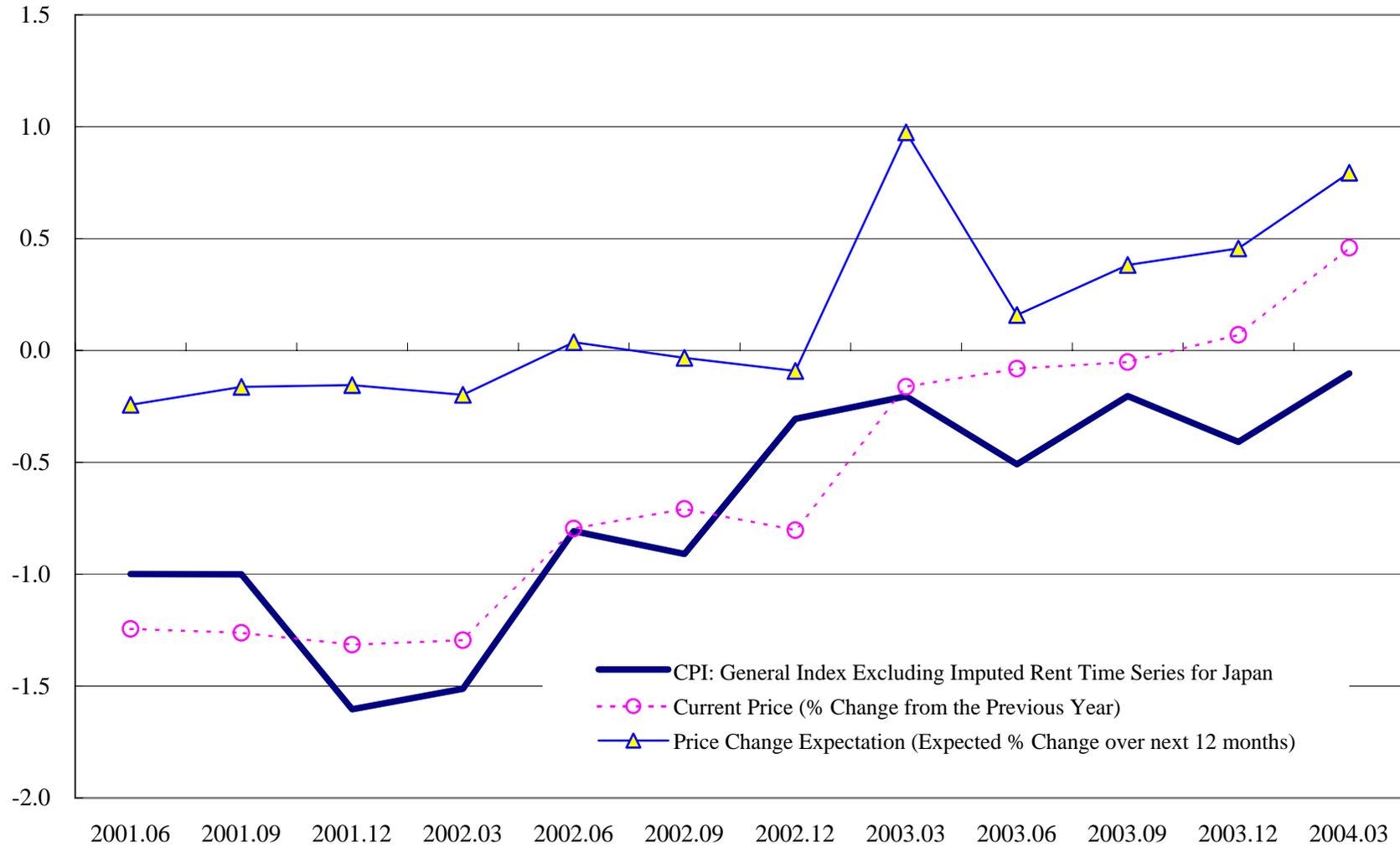
Figure 1. Price Movements, 1980-2003



Source: GDP deflator: Cabinet Office 'National Accounts.' CPI: Ministry of Internal Affairs and Communications 'Consumer Price Index.'

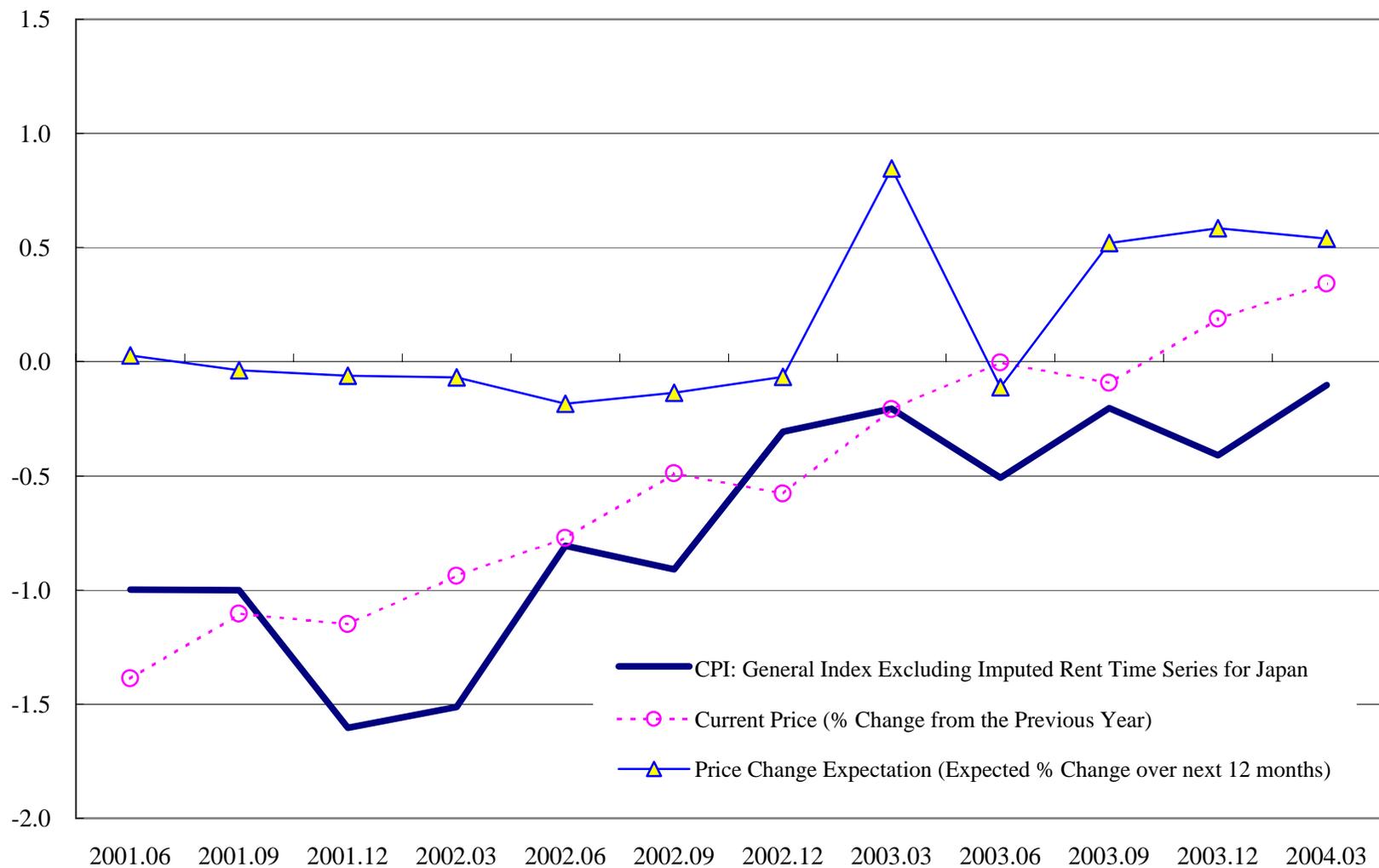
(FY)

Figure 2. Current Price and Price Expectations (Average, All Sample)



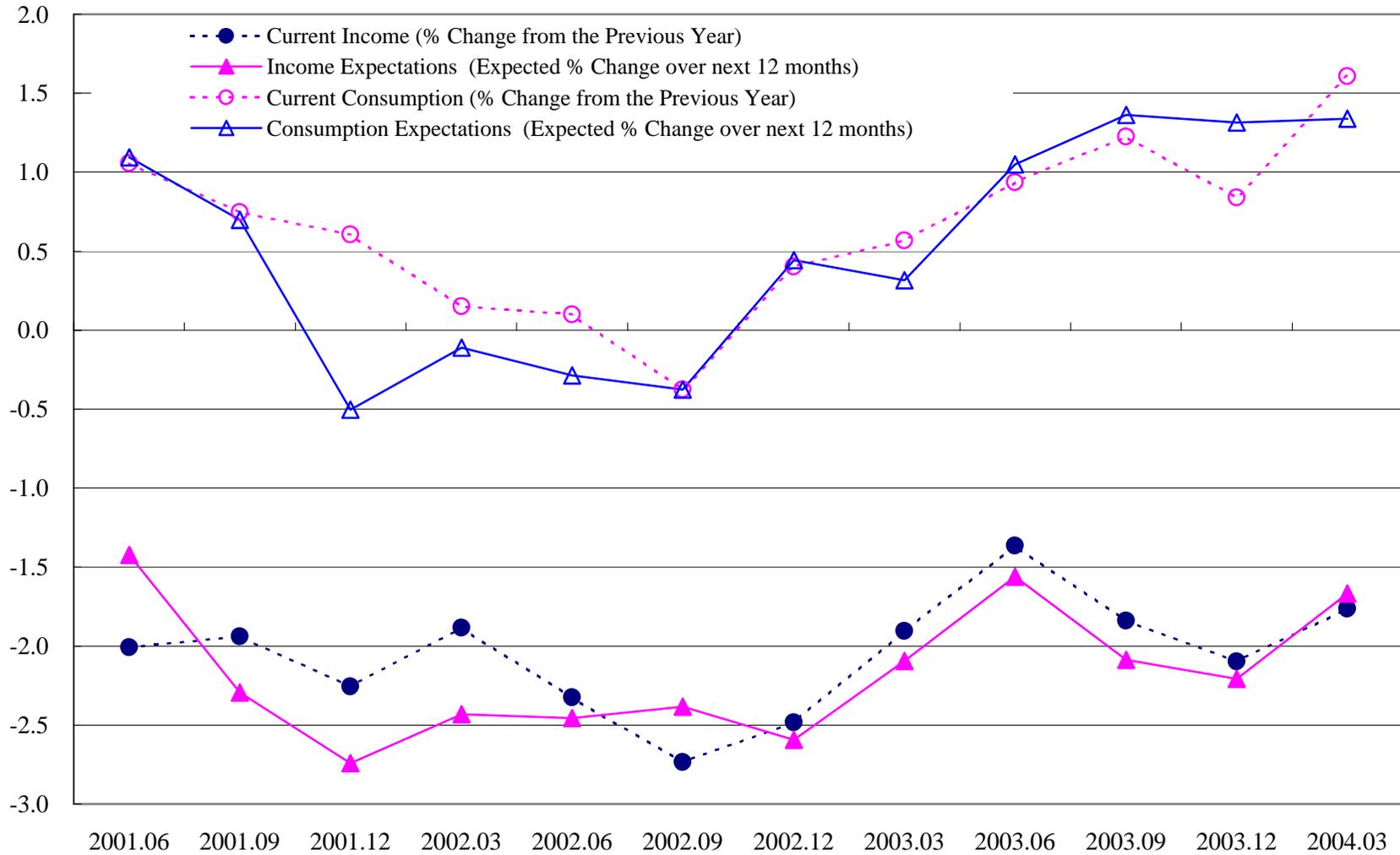
The Kokumin Seikatsu Monitors. Author's calculation. The source of CPI data is Ministry of Internal Affairs and Communications 'Consumer Price Index.'

Figure 3. Current Price and Price Expectations (Average, Full-Cover Sample Only)



Source: The Kokumin Seikatsu Monitors. Author's calculation

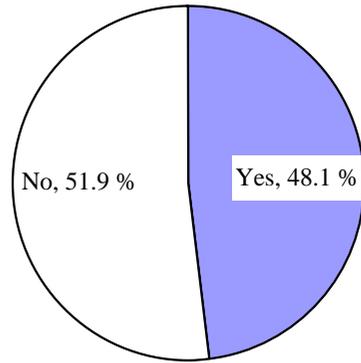
Figure 4: Income and Consumption (Actual and Expectations; Average, All Sample)



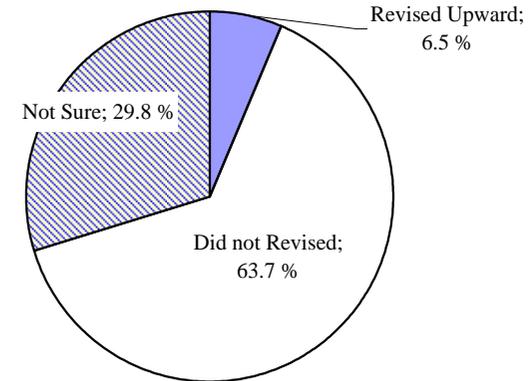
Source: The Kokumin Seikatsu Monitors. Author's calculation

### Figure 5. Knowledge and Reaction to the Easy Monetary Policy Announcement (March 2002 Survey)

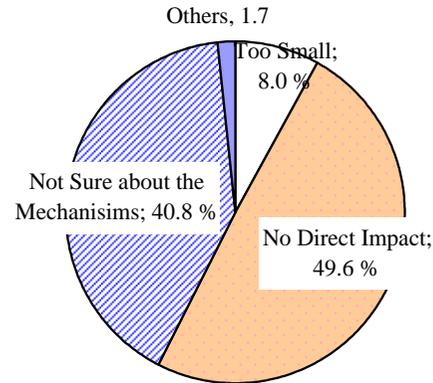
(1) Do you know about the BOJ's "Quantitative Monetary Easing" that was introduced on March 19, 2001? (June 2001 Survey)



(2) Did you revise your price expectations in response to the "Quantitative Monetary Easing"? (June 2001 Survey)



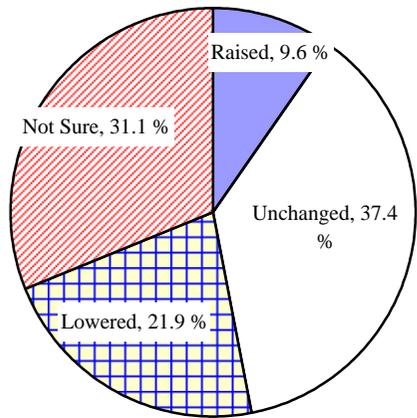
(3) Reason why the people surveyed did not react to the "Quantitative Monetary Easing" Announcements. (March 2002 Survey)



Source: The Kokumin Seikatsu Monitors. Author's calculation.

### Figure 6. Reaction of Price Expectations to News (September 11th Terrorism and Iraq War)

(1) Did you revise your price expectations in response to the September 11th Terrorism? (December 2001 Survey)



(2) Did you revise your price expectations in response to the Iraq War? (March 2003 Survey)

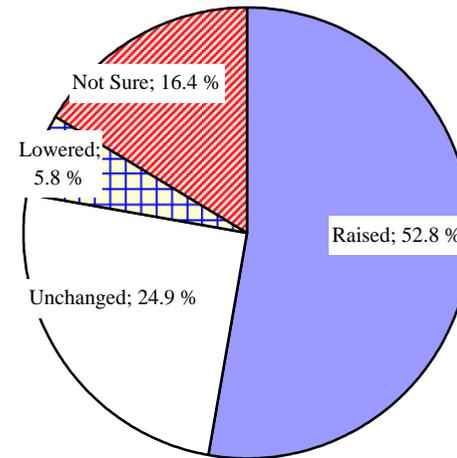


Figure 7: Income and Consumption (Actual and Expectations; Full-Cover Sample Only)

