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# Japan's Chronic Deflation: Causes and Consequences*

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**Abstract**

For nearly 30 years, starting in the mid-1990s, Japan has experienced an inflation rate very close to zero. This prolonged period of near-zero inflation is referred to as "chronic deflation." While some other countries have faced brief episodes of low or negative inflation, Japan is unique in having endured such an extended timeframe of 30 years. In this chapter, I will examine the reasons behind chronic deflation, focusing on why it has persisted for so long and the impact it has had on economic welfare. Additionally, since spring 2022, inflation patterns seen in the post-pandemic periods of the US and Europe have reached Japan, resulting in a shift in Japan's consumer price inflation rate from near zero to positive. I will explore the mechanisms behind this change and consider whether it could help Japan finally escape chronic deflation.

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# 1 Introduction

The inflation rate in Japan has remained very close to zero for nearly 30 years, beginning in the mid-1990s. This extended period of near-zero inflation is referred to as "chronic deflation." While some countries have experienced a few years of near-zero or negative inflation, Japan is unique in enduring such a lengthy stretch of 30 years. In this chapter, I will explain what chronic deflation is and discuss its causes and consequences.

The structure of this chapter is as follows: In Section 2, I demonstrate that chronic deflation is characterized by the close relationship between prices and wages. I also show that individual prices, not just the average of various prices, remained unchanged year after year. Likewise, for wages, individual firms' wages, rather than just the average across various firms, also remained unchanged year after year. Section 3 delves into when and why chronic deflation began. Section 4 examines the characteristics of corporate pricing behavior and consumer inflation expectations during the chronic deflation period. In Section 5, I explore the impact of chronic deflation on economic welfare, specifically looking at the dysfunction of the price mechanism during this period and how it may have led to distortions in resource allocation. Section 6 addresses whether chronic deflation is ending now that the Consumer Price Index (CPI) inflation rate has returned to positive since spring 2022 and examines the factors contributing to this change. Finally, Section 7 presents the conclusion of this chapter.

# 2 What is chronic deflation?

## 2.1 Japan as an outlier

Simon Kuznets once said, "There are four types of countries in the world: developed countries, developing countries, Japan, and Argentina." This comment was made in the 1960s when Japan was experiencing rapid economic growth. The economic development of Japan at that time was unique compared to other countries. However, Japan is no longer a high-growth country; it has become an ordinary country in terms of economic growth. Nevertheless, Japan remains an outlier that would capture the attention of the great economist Kuznets if he were alive today.

Figure 1 shows the ranking of approximately 200 countries based on their CPI inflation rates.

Japan was ranked 168th in 2000, placing it near the bottom, and remained in a similar position until 2012. Japan's ranking started to improve slightly between 2013 and 2015, mainly due to the implementation of Abenomics. The Bank of Japan (BOJ) introduced an ultra-easy monetary policy, which weakened the yen, resulting in increased import prices that were passed on to domestic prices. However, this improvement was short-lived, as the inflation rate dropped again due to yen appreciation. In 2017 and 2018, Japan's ranking fell back near the bottom. The situation continued in 2020 and 2021 when the pandemic started. In sum, apart from a short period of Abenomics, Japan has consistently ranked near the bottom. Kuznets focused on economic growth rates, but Japan still stands out as an outlier when considering inflation rates.[1]

Japan has experienced not only low inflation rates but also significantly lower increases in nominal wages compared to other countries over an extended period. Furthermore, according to statistics from the Bank for International Settlements (BIS), Japan has consistently ranked at or near the bottom in terms of the central bank's policy rates since 2000. In summary, Japan has been an outlier, exhibiting abnormally low inflation, wage growth, and interest rates.

## 2.2 Characteristics of chronic deflation #1: Close correlation between prices and wages

When did Japan become an outlier in terms of inflation and wage growth? Figure 2 illustrates the changes in prices for goods and services, as well as nominal wages, since 1973, when Japan transitioned to a floating exchange rate regime. From the 1970s to the early 1990s, prices and nominal wages in Japan increased steadily. This trend was similar to that of the US, suggesting that everything was normal during that period. However, starting in the mid-1990s, Japan's three lines suddenly became flat. Unlike countries like the US, where prices and wages continued to rise, Japan experienced a prolonged period of stagnation, during which both prices and wages remained unchanged year after year. This situation is referred to as "chronic deflation."[2]

[1] After 2022, Japan faced a surge in inflation driven by overseas factors, leading to rising prices and an improvement in its rankings. However, it remains uncertain whether this trend will persist. According to forecasts from the IMF, which are reflected in the figure, Japan is projected to return to the lowest ranking starting in 2026.

[2] Deflation originally means a decline in prices and wages. However, in Japan, the phenomenon of prices and wages being kept unchanged year after year has been termed chronic deflation. This terminology will be used throughout this chapter.

Watanabe (2022b) argues that chronic deflation was caused by a kind of wage-price spiral, which he called the Japanese version of the wage-price spiral.[3] From the viewpoint of labor unions, given that prices remain unchanged year after year, workers can maintain their standard of living without demanding wage increases. On the other hand, from the viewpoint of companies, since wages remain unchanged year after year, labor costs remain unchanged year after year, and therefore, there is no need to pass these costs on to prices. Thus, a situation arises in which both prices and wages remain unchanged. A wage-price spiral is usually defined as a phenomenon in which prices and wages *rise* in a spiral-like fashion, with the rise in prices following the rise in wages and the rise in wages following the rise in prices. The Japanese version of the wage-price spiral is similar in that prices and wages are closely interrelated. However, unlike the traditional wage-price spiral, prices and wages remain *unchanged* in a spiral fashion.

### 2.3 Characteristics of chronic deflation #2: Not only has the average of prices, but individual prices have remained unchanged

The second important feature of chronic deflation is that not only has the average of various prices remained unchanged year after year, but individual prices have also remained unchanged year after year. Similarly, for wages, not only was the average of various workers' wages kept unchanged year after year, but individual wages were also kept unchanged.

Figure 3 compares Japan's item-level price change distribution as of March 2014 with those of Canada, the UK, and the US. The vertical axis shows the sum of the CPI weights of the items included in each bin on the horizontal axis. For Japan, the highest density is found in the bins from $-0.75\%$ to $-0.25\%$ and from $-0.25\%$ to $+0.25\%$, and these two bins alone make up about half of the total CPI weight, suggesting that many Japanese firms tend to keep prices unchanged year after year. In contrast, the U.S. distribution peaks at 2-3%, indicating that US firms typically raise their prices year after year in this range. The peaks for the other two countries are also positive, as is the U.S., at 1-2%.

Since when have prices in Japan remained unchanged? The top panel in Figure 4 shows the evolution of the CPI weight of items with near-zero inflation. In the 1970s and 1980s, around

[3]See Blanchard (1985), Blanchard (2022), Lorenzoni and Werning (2024) for more on wage-price spirals.

20% of item prices remained unchanged. This percentage stayed the same in the first half of the 1990s. However, by the end of the 1990s, it increased to almost 50% and has remained high since then. As shown in Figure 2, the average of individual prices began to remain unchanged in the mid-1990s, but at about the same time, individual prices also began to remain unchanged.

The increase in the percentage of items whose prices are kept unchanged means that price stickiness has increased. Price stickiness has increased for several reasons. Watanabe and Watanabe (2018) highlight endogenous and exogenous factors that contributed to this rise during periods of chronic deflation. On the endogenous side, the menu cost model suggests that when trend inflation is high, firms are motivated to adjust their prices frequently. This is because if they keep their prices unchanged, they will fall relative to their competitors. However, when trend inflation is near zero, even if a firm maintains its current prices, its relative prices do not decline significantly, leading to less frequent price adjustments. Additionally, Watanabe and Watanabe (2018) argue that Japanese firms may have lost their ability to transfer cost increases into higher prices, especially as competition from Chinese firms intensified during the 1990s.

Furukawa et al. (2024) demonstrate, using CPI source data, that the frequency of price adjustments has significantly decreased during periods of chronic deflation. They investigate whether a menu cost model can explain this reduction in the frequency of price adjustments. Their conclusion shows that only about half of the decline in price adjustment frequency can be attributed to the decrease in trend inflation. This suggests that a substantial portion of the decline is due to exogenous factors.

Turning to wages, the bottom panel in Figure 4 shows the percentage of companies that did not change wages. In the 1970s and 1980s, this percentage was only a few percent. However, in the late 1990s, it exceeded 10%, and by the early 2000s, it had risen to nearly 30%, and this trend has continued until recently. This means that not only did the average wage remain unchanged, but wages also remained unchanged at the individual company level. This trend began in the late 1990s, around the same time the average wage started to remain unchanged, as shown in Figure 2.

## 3 When and why did chronic deflation start?

As illustrated in Figure 2, chronic deflation began in the mid-1990s. What happened then, and how did it lead to the onset of chronic deflation? A significant event during that time was that Japanese workers' wages in dollars reached a peak globally. Specifically, Japan underwent a real estate bubble in the late 1980s and early 1990s, during which major companies significantly raised wages, leading to a substantial increase in labor costs. Consequently, wages in yen were already extremely high. Furthermore, the yen appreciated sharply in 1995. These two factors resulted in elevated dollar-denominated wages for Japanese workers. Figure 5 illustrates the ranking of Japanese workers' wages among OECD countries. In 1995, Japan ranked second, while Switzerland held the first position.

Under these circumstances, the business community was increasingly concerned that Japan would struggle to compete with Chinese companies, which were rapidly entering global markets at that time. Specifically, in 1995, the Japan Federation of Employers' Association (Nikkeiren) released a report titled "Japanese-style Management in a New Era: Challenges and Measures to Meet Them," suggesting that wages should be curtailed, as such high wage levels were uncompetitive compared to China's. However, even if the business community claims to control wages, the labor unions will not easily comply. Hayakawa (2023) argues that an implicit agreement was established where, in exchange for companies protecting the jobs of permanent employees, the unions would not demand higher wages.

A series of subsequent events confirms the existence of an implicit agreement. The first was the "Toyota shock" that occurred in March 2002. During the spring wage offensive of that year, Toyota responded with a zero base increase. Toyota didn't need to reduce its base increase to zero. However, Toyota informed the union that it could no longer continue offering base increases as it had in the past to remain competitive globally. This declaration influenced other companies, many of which have since adopted zero base increases. The second event was the Japan Business Federation (Keidanren) declaration in December 2000 that the spring wage offensive was ending. As a result, the Japanese Trade Union Confederation (JTUC-RENGO) chose not to issue a unified demand for a base increase during the 2003 spring wage offensive, a decision that persisted in the

following years.[4]

What effect did the wage restraints during the spring wage offensive have on company wages? Aoki et al. (2023) calculate wage markdowns and price markups using financial data for individual firms. The wage markdowns reflect how much each firm suppresses wages relative to the marginal product of labor. The price markups indicate how much each firm can add to its marginal cost when setting prices. According to their estimates in Figure 6, the wage markdown increased slowly in the late 1990s (i.e., suppressing wages even as labor productivity improved) and then accelerated in the early 2000s, signifying a stronger tendency to keep wages unchanged after the Toyota shock. Conversely, price markups declined slowly in the second half of the 1990s (i.e., suppressing the pass-through of cost increases to prices) and then fell rapidly from 2000 to 2008, indicating a stronger tendency to keep prices unchanged during this period.

The figure clearly shows that the rise in wage markdowns and the decline in price markups occurred almost simultaneously, suggesting that the two are closely related. At the same time, this result complicates the determination of which is the cause and which is the effect. However, Hayakawa (2023) and other anecdotal evidence suggest that wage markdowns triggered this trend. With consumers' purchasing power remaining stagnant due to unchanged wages, firms had little choice but to keep their prices unchanged to retain customers. This marked the beginning of chronic deflation.

# 4 Firms' price-setting behavior and consumers' inflation expectations during chronic deflation

During chronic deflation, firms and consumers changed their behavior significantly. First, firms began to adopt pricing strategies that differed notably from their previous practices and from those of companies in other countries. Second, consumers strongly expected that prices would remain unchanged in the future.

[4]Returning to Figure 5, Japan's wages have been steadily declining in the rankings since 2000: 5th in 2001, 8th in 2002, and 11th in 2003. This is due to many companies stopping wage increases after the Toyota Shock.

### 4.1 Firms' price-setting behavior with kinked demand curve

According to a survey of firms conducted by the BOJ (Bank of Japan, 2024), approximately 80% of firms reported that they were unable to pass on cost increases to prices during the period from the mid-1990s to 2010. This indicates that many firms, regardless of industry or size, lacked pricing power. Greenspan (1999a, 1999b) points out that the biggest problem with deflation, such as that occurring in Japan, is the weakening of corporate pricing power, precisely what happened to Japanese companies during chronic deflation. When asked about their inability to raise prices effectively, the most frequently cited reason was "price competition" (75%). This suggests that many companies were concerned about losing customers if they were the only ones increasing prices while their competitors kept theirs unchanged.[5]

Aoki et al. (2019) demonstrate that a kinked demand curve may arise if the inflation rate remains at zero or slightly negative for an extended period, and consequently, people's inflation expectations become close to zero. This situation occurs because customers tend to flee in large numbers if firms raise their prices. Specifically, they consider a Lucas-Phelps island economy, where consumers are uncertain about the general price level and the central bank's inflation target but receive signals regarding both and engage in Bayesian learning. In this context, if the general price level remains unchanged for an extended period, consumers will begin to firmly believe that it will continue to be kept unchanged. Consequently, when they observe a price increase at one store, they will stop shopping there and instantly choose to go to another store, believing that prices will remain unchanged there. As a result of consumers' tendency to flee from price hikes, the demand curve becomes kinked, inhibiting firms from passing any cost increases onto prices.

To check the validity of their model analysis, Watanabe (2022a) conducts a survey involving 20,000 consumers from the UK, US, Canada, Germany, and Japan. One of the questions asked is, "How do you think prices will change one year from now compared to today?" As illustrated in

[5]One of the firms that responded to the BOJ survey shared the following in the open comments section: "During the bubble period, we naturally included the increase in purchase prices in our quotes, and suppliers accepted this without question. However, after the bubble burst, suppliers became much more resistant to price increases. By the late 1990s, when the economy was at its lowest due to the collapse of financial institutions, the concept of passing on cost increases to prices had nearly vanished. During this challenging period, we absorbed the rising costs internally rather than passing them on, focusing instead on reducing costs through diligent efforts. ''

Figure 7, over 30% of Japanese consumers respond that they expect prices "will remain about the same," which is notably higher than the responses from consumers in other countries. In contrast, more than 40% of respondents in the US and nearly 40% in Germany and Canada expect that prices "will probably go up quite a bit," while less than 10% of Japanese respondents shared this view. This indicates that Japanese consumers have significantly lower inflation expectations than those in the US and Europe.

To investigate how consumers would respond to a price increase, the survey asks, "What would you do if the price of a specific item at your usual store increased by 10%?" The respondents could reply with "yes" or "no" to each option: "I would buy the same amount of that item at that store," "I would buy less at that store," or "I would stop buying at that store." The responses are shown in Figure 8, where the bar represents the percentage of "yes" responses minus the percentage of "no" responses. In the U.S., a majority of respondents indicated "yes" to "buy the same amount," with a positive difference of 35% compared to the "no" responses. Conversely, the figures were negative in Japan, reflecting a high percentage of "no" responses. This indicates that U.S. consumers tend to view price increases as unavoidable, while many consumers in Japan are unwilling to shop at a store that raises prices.

The survey also asks how consumers would react to a 10% price *decrease*. One might expect many consumers to purchase more due to the lower price; however, this is not the case. Instead, many individuals tend to "buy the same amount of that product at that store," a behavior commonly observed in both Japan and the U.S. This finding supports the concept of the kinked demand curve, which illustrates that while the quantity sold drops significantly with a price increase, it does not rise considerably with a price decrease.

In sum, the U.S. demand curve is kinked because consumers respond differently to price increases and decreases. However, the degree of this kink is moderate, as many customers continue to shop at the store even after prices rise. In contrast, the kink in Japan is pronounced, as many consumers tend to avoid stores that raise their prices. These findings align with the results of Aoki et al. (2019) based on model analysis.

### 4.2 Consumers' highly adaptive inflation expectations

Since 2013, the BOJ has been strongly committed to raising inflation and has implemented an ultra-easy monetary policy. Nonetheless, consumers' inflation expectations have remained low. Nishino et al. (2016) argue that this occurred because Japan's inflation expectations were highly "adaptive" in that they were strongly influenced by past inflation rates. According to their estimates, during 2000-2016, the variation in one-year-ahead inflation expectations attributable to past inflation rates was 0.13 for the U.S., 0.09 for the U.K., and 0.31 for the euro area. In contrast, it was 0.69 for Japan, indicating that past inflation rates had an exceptionally strong impact on inflation expectations in Japan.

Why were inflation expectations in Japan so adaptive? Diamond et al. (2020) argue that this can be explained by the fact that an individual's inflation expectations are significantly influenced by the inflation they have personally experienced throughout their life.[6] For example, individuals in their 50s faced inflation during the oil crisis of the 1970s. The older generation also observed the hyperinflation that affected Japan in the early postwar period. Survey results indicate that the inflation expectations of these older generations increased in response to the BOJ's monetary easing and related announcements. Conversely, those born after the 1980s have only encountered a period of deflation throughout their lives, leading them to be skeptical of the BOJ's assertions that inflation will rise in the future. Consequently, this younger generation's inflation expectations did not rise, even during the BOJ's ultra-easy monetary policy period.

However, generational differences also reflect age differences and the low inflation expectations of the generation born after the 1980s may indicate age differences rather than generational differences. Specifically, the consumption baskets of younger and older generations differ significantly; if the prices of goods in the younger generation's consumption basket have not risen much compared to those of the older generation, then the inflation expectations of the younger generation will not, either. To account for differences in the consumption baskets of each age group, Diamond et al. (2020) utilized scanner data to measure the inflation rate in the consumption baskets of each age group, subsequently decomposing the differences in inflation expectations for each gener-

[6] See Malmendier and Nagel (2016) for the idea that an individual's inflation expectations are shaped by their personal experiences in the past.

ation into components attributable to age differences and components attributable to generational differences. Based on this methodology, they demonstrate that the lower inflation expectations of younger age groups stem from generational differences (i.e., differences in inflation experience) rather than age differences.

### 4.3 The zero-inflation norm

The concept of a "zero inflation norm" has gained attention as a significant reason why consumer inflation expectations in Japan have remained around zero for an extended period despite the BOJ's ultra-easy monetary policies.

Watanabe (2022a, 2024) observes that the implicit agreement between buyers and sellers – what Okun (1981) referred to as the "invisible handshake" – may have been disrupted by the stability of prices and wages for a prolonged period. As Okun (1980, 1981) and Rothemberg (2011) have pointed out, there is a distinction between fair and unfair price increases that both sellers and buyers typically accept. For example, Kahneman et al. (1986) illustrate a well-known case in which many consumers consider it unfair for sellers to raise prices during snowstorms when demand for shovels surges. In contrast, if the cost to manufacture shovels increases and the seller adjusts the price accordingly, this price hike is generally perceived as fair.

Watanabe (2022a, 2024) argues that the perception of fair versus unfair pricing has changed significantly in Japan amidst chronic deflation. Specifically, consumers increasingly view it as unfair for companies to raise prices under any circumstances, even for legitimate reasons such as rising production costs. If a store raises prices against this perception, customers will likely shop elsewhere. As consumer attitudes have evolved, sellers have had to adapt to this new understanding of fairness, leading many companies to avoid passing on higher costs to consumers, even when those cost increases result from rising import prices.

Kuroda (2022) highlights that this situation undermined the effectiveness of the BOJ's ultra-easy monetary policy: "The primary reason for the inability to achieve the price stability target of 2%, despite the Bank's large-scale monetary easing for over nine years, is that this 'zero percent anchoring' of inflation expectations – in other words, the 'zero-inflation norm' – has been extremely persistent. ... The zero-inflation norm in Japan means that everyone is essentially acting in concert

to keep prices unchanged."

Uchida (2024) argues that chronic deflation should not be viewed solely as an economic issue, but rather as a social phenomenon. In a typical economy, when aggregate demand is weak, firms typically respond by reducing production, employment, and prices while waiting for demand to recover. However, Japan did not follow this pattern in response to weak demand. Instead, there was a strong social consensus in Japan prioritizing job retention above all else. Consequently, firms continued to maintain their workforce even in the face of weak demand, and the government supported them through various subsidies, furlough programs, and public financing. As a result, unemployment remained stable, and corporate bankruptcies did not increase despite the lack of demand.

According to Uchida (2024), keeping wages and prices unchanged was an essential piece of achieving the social consensus of maintaining employment. For companies to maintain employment in an environment of weak demand, labor unions must give up their demands for wage increases. In addition, weak demand did not lead to more bankruptcies, so rival firms remained in the market and excessive competition continued. As a result, companies confronted a kinked demand curve, where a slight price increase led to a significant decrease in demand. Consequently, even when costs rose, these increases could not be reflected in prices. Thus, the strong belief that "today's prices and wages will be the same tomorrow" spread throughout society, which in turn influenced the pricing and wage-setting behavior of both firms and unions.

# 5 Welfare implications of chronic deflation

## 5.1 Dysfunctional price mechanisms

As mentioned in Section 2, one characteristic of chronic deflation is that not only does the average of various prices remain unchanged, but individual prices also tend to stay the same. The same applies to wages. In other words, both price and wage rigidities have significantly increased. Watanabe and Watanabe (2018) and Furukawa (2014) indicate that higher price rigidity is not caused by endogenous factors related to lower trend inflation; rather, it stems from exogenous factors. This suggests that the price mechanism may not fully function under chronic deflation.

Watanabe (2024) highlights that increased price and wage rigidity under chronic deflation may have led to resource misallocation. Taking the labor market as an example, MHLW (2023) notes a significant divergence between labor productivity and wages in Japan throughout this deflationary period. Figure 9 illustrates the labor productivity per worker and real wages in Japan and the U.S. from 1996 to 2021. In the U.S., labor productivity increased by 48.3% during this period, while real wages rose by 47.2%. Thus, the growth rates of labor productivity and real wages were roughly equal. In contrast, Japan experienced a labor productivity growth rate of 13.2%, while real wages grew by just 2.4%. This highlights a significant disparity between the growth of productivity and the growth of real wages in Japan.

According to MHLW (2023), a 1.0% increase in labor productivity in the U.S. typically results in a wage increase of 1.03%. In Japan, however, a similar 1% increase in labor productivity corresponds to a much more limited wage increase of just 0.42%. This discrepancy can be attributed to the growing rigidity of nominal wages in Japan, which has resulted in a misalignment between labor productivity in individual firms and industries and their respective wages. In other words, the labor market's price mechanism has become dysfunctional, as wages do not accurately reflect labor productivity, potentially leading to the misallocation of labor resources.[7]

Itoh (2024) and Watanabe (2024) argue that the dysfunctional price mechanism observed during chronic deflation hindered labor migration from less productive industries and firms to more productive ones. Ueda (2023) highlights that the consistently unchanged prices year after year caused a loss of the price discovery function, which reduced resource allocation efficiency and ultimately impeded productivity growth.[8] However, there is currently no evidence to suggest that productivity declined as a result of the dysfunctional price mechanism during chronic deflation,

[7]Watanabe (2024) conducts a comparison of labor productivity and wages on a company-by-company basis and shows that 81% of firms that experienced an increase in labor productivity between 2010 and 2022 also faced a decline in wages, indicating that wages were undervalued. In contrast, among firms that saw a decline in labor productivity during the same period, 84% had wages that increased, suggesting that those wages were overestimated. This trend of undervaluing and overestimating wages may have stemmed from the fact that wages remained unchanged regardless of fluctuations in labor productivity.

[8]Ueda (2023) states: "A key feature of the low-inflation environment that Japan experienced was the strong bias toward the status quo in wage- and price-setting behavior, leading to many prices remaining unchanged. This situation meant that the relative prices between individual goods were less likely to fluctuate, making the market's price discovery function less effective. Consequently, the allocation of resources may have become inefficient, potentially leading to reduced productivity across the economy. The same issue applies to wages."

as noted by these three authors. Future research is essential to clarify the welfare implications of chronic deflation.

In a survey conducted by the BOJ, companies were asked to choose between two scenarios: one where both prices and wages rise moderately and another where prices and wages remain unchanged (Bank of Japan 2024). Over 70% of companies favored the scenario in which both prices and wages rise moderately, regardless of industry or size. Note that this survey was conducted after firms had experienced rising prices and wages since the spring of 2022. Therefore, the respondents had firsthand experience of both chronic deflation – when prices and wages remained unchanged – and the current situation with rising prices and wages. Many indicated that the latter situation was preferable. When examining the reasons behind their preferences, many companies noted that it was "easier to pass on prices." However, the most common response was that "an increase in wages would positively affect household sentiment and consumption." This result suggests that many firms have regained pricing power through inflation over the past two years and recognize that the main challenge now is correcting distortions in wage-setting. It is also worth noting that a minority of respondents expressed a preference for a situation in which prices and wages remain unchanged. Their reasons included that "purchasing costs would be less likely to rise" and "it would be easier to make a business plan."

### 5.2 Non-price competition

Non-price competition exists in every country. For instance, pizza delivery companies often compete based on delivery speed without changing the price of the pizza. During periods of chronic deflation, increased price and wage rigidity has heightened non-price competition. Consequently, the entire country has become more engaged in non-price competition.

What was the outcome? In a price-competitive economy, price serves as the most crucial indicator for producers when deciding what to manufacture and in what quantities. Similarly, for consumers, price is the key factor in determining what to purchase and how much to buy. However, in a state of chronic deflation, prices remain unchanged, preventing both firms and consumers from gaining useful information. As a result, price signals become ineffective, making it impossible to allocate resources efficiently based on these signals.

Non-price competition was typically manifested in the phenomenon of effectively raising prices by reducing the volume or weight of products while keeping product prices unchanged. Imai and Watanabe (2014) extract products for which volume and weight information is available from approximately 300,000 products sold in about 300 supermarket stores. Then, by using information on the product's name, the name of the company manufacturing the product, and the entry and exit points of the product, they collect about 20 million cases of products changing from the previous generation to the new generation.[9] Figure 10 shows the number of cases of product downsizing measured in this way.

The figure categorizes generational changes in products into three groups: those that decreased in volume or weight, those that increased, and those that remained the same. In the early 2000s, the number of cases of generational change was low. However, it began to rise in 2007, with a significant increase in 2008. This surge was primarily attributed to generational changes that involved downsizing.

In 2008, there was a sharp rise in the prices of grains, raw materials, and energy imports. Companies reliant on these products, particularly food manufacturers, experienced a rise in production costs. While some companies with strong pricing power could pass these cost increases onto their customers, many companies with weaker pricing power refrained from doing so for fear of losing their clientele. Consequently, these firms opted to manage rising costs by downsizing their products instead.

Although the number of product downsizing instances decreased over time, it began to rise again in 2013, reaching a peak in 2014 and 2015. During this period, the BOJ's ultra-easy monetary policy led to a weakened yen, further increasing costs for companies that depended heavily on imported raw materials. In this challenging environment, companies with weak pricing

[9]The downsizing of a product can occur for reasons beyond an effective price increase. For instance, consumer demand has shifted towards smaller products due to an aging population and fewer family members. When a company downsizes its products in response to this shift, it can enhance consumer satisfaction without implying a price increase. Introducing a new smaller product often allows sales of the previous generation to continue, enabling companies to diversify their offerings with both sizes. In contrast, an effective price increase usually leads to discontinuing the previous generation product, as maintaining larger products at the same price on shelves becomes impractical. Based on this, Imai and Watanabe (2014) identified cases fitting these conditions: (1) a new product is launched under the same brand and name as the previous generation but with reduced volume and weight, and (2) sales of the prior generation are discontinued time.

power once again resorted to downsizing their products.

# 6 How and why did chronic deflation end?

## 6.1 Significant changes that occurred since spring 2022

The chronic deflation that began in the mid-1990s is showing signs of coming to an end. Japan's CPI inflation rate started to rise in the spring of 2022, reaching 4% by early 2023. Although the CPI inflation rate has gradually declined since peaking in the summer of 2023, it remains close to the BOJ's target of 2% as of spring 2025. This current situation is significantly different from the period of chronic deflation when the inflation rate was nearly zero.

The increase in Japan's CPI inflation rate was largely influenced by the surge in post-pandemic inflation observed in the US and Europe. However, the rise in import prices alone does not account for all the effects on domestic prices. A comparison of private forecasters' CPI inflation rate predictions from January 2023 with the actual figures shows that many anticipated the rise in import prices would eventually level off, leading to a decline in domestic prices. Contrary to these expectations, the CPI inflation rate has not significantly dropped below 2%. This discrepancy highlights a notable and intrinsic rise in inflation within Japan, indicating the likely end of chronic deflation.

As inflation has returned to its normal level of 2%, labor unions have begun demanding higher wages since the spring of 2023. Additionally, the BOJ has moved away from using unconventional monetary policy tools and raised the policy rate to a positive level in March 2024. In summary, the unusual dynamics among inflation, wage growth, and interest rates seem to be normalizing.

## 6.2 This time is different #1: Consumers' inflation expectations

During the 30 years of chronic deflation, there were periods when import prices rose; however, these increases did not have a lasting impact on domestic prices. What accounts for the sustained impact on domestic prices this time?

Let's compare the situation from spring 2022 onward with the initial period of the BOJ's ultra-easy monetary policy from 2013 to 2015. This policy began in the spring of 2013, resulting

in a rapid weakening of the yen. This depreciation led to rising import prices, some of which were passed on to domestic prices. During that period, the increase in domestic prices, similar to the current situation, was triggered by rising import costs. However, the rise in domestic prices at that time was not sustainable and ultimately proved to be temporary. In contrast, the current increase in prices appears to be more sustainable. What accounts for this difference?

The first significant difference between past and present circumstances is consumers' expectations regarding inflation. Figure 11 displays the results from a consumer survey about inflation expectations. The blue bar represents the percentage of respondents who answered, "Prices will rise significantly," when asked, "How do you think prices will change in one year?" At the beginning of the ultra-easy monetary policy, only 15% of respondents anticipated a significant rise in prices. In contrast, the 2022 survey revealed that this percentage exceeded 40% and continued to remain above 40% the following years. This indicates that inflation expectations are currently higher compared to the early phase of the ultra-easy monetary policy.

The percentage of respondents who indicated that "prices will remain unchanged," represented by the grey bar, has significantly decreased from 2022 to 2024, dropping below 10%. This decline suggests that the expectation of stable prices has largely faded. In contrast, at the start of the ultra-easy monetary policy, over 20% of respondents held this belief, highlighting a significant change in sentiment over the years.

The decline in the number of people expecting prices to remain stable, paired with the rise in those anticipating significant price increases, can be attributed to the increasing inflation rate that many individuals have directly experienced. As a result, people have begun to believe that prices will continue to rise. In other words, the increase in inflation expectations has followed the rise in the actual inflation rate.

To assess this issue, I analyzed inflation rates during the survey period, which takes place annually from late March to early April. Utilizing scanner data from over 1,000 supermarkets, we calculated the inflation rate for that specific week. In the spring of 2022, more than 40% of respondents anticipated "a significant rise" in prices, while the recorded inflation rate for that week was only 1.6%. However, by the 2023 survey, the inflation rate had surged to 7%. This

suggests that inflation expectations had risen even before the actual rate increased, indicating that other factors may have influenced these expectations.

One possible factor contributing to this situation is the severe inflation that occurred in the US and Europe, beginning in the spring of 2021. This inflation may have alarmed Japanese consumers. Additionally, the Russian invasion of Ukraine in February 2022 likely heightened concerns about rising prices for crude oil, natural gas, and grains, further impacting consumer expectations in Japan.

### 6.3 This time is different #2: Labor shortage

As mentioned in Section 2, a key characteristic of chronic deflation is the close interrelation between prices and wages, both of which remain unchanged each year. Therefore, to end chronic deflation, it is essential that not only prices adjust but that wages also begin to change.

Figure 12 compares the early stages of ultra-easy monetary policy from 2013 to 2015 with the current period from 2022 to 2024 concerning wage increases. We observe significant rises in both import and domestic prices during these two periods. However, the rate of wage increases varies considerably between them. In the earlier phase, while the Abe administration encouraged negotiations between labor unions and companies, the wage increase in 2014 was only modest. In contrast, for the 2023 spring wage negotiations, the Japanese Trade Union Confederation (JTUC-RENGO) targeted a 5% pay rise – 3% for base pay increase – resulting in wage hikes for the first time in 30 years. This target was further raised for 2024, leading to even higher wage increases.

Why were the results of the wage increases so different this time compared to the last? The key reason for the difference was a labor shortage. In 2023 and 2024, there was a significant shortage of workers, allowing labor unions to take a strong stance and push through substantial wage increases. However, the decline in Japan's working population is not a new issue; it had already begun during the previous period.

Looking back, the Abe administration aimed to address the decline in labor supply by implementing changes to the tax system to encourage greater participation from women and senior citizens, who had previously had low labor participation rates. These measures were successful, significantly increasing the labor supply from these groups at that time. As a result, there was no

labor shortage, and unions struggled to demand substantial wage increases during the spring wage negotiations. In contrast, by the spring wage negotiations in 2023 and 2024, the labor participation rates for women and seniors were already high, making it difficult to raise them further. This environment contributed to a severe labor shortage, enabling labor unions to engage in strong negotiations for higher wages.[10]

# 7 Concluding Discussion

Since the mid-1990s, Japan's consumer price inflation rate has fluctuated around zero percent for nearly 30 years. However, this does not imply that price stability — an ideal pursued by most central banks — was achieved during this period in Japan. First, the zero percent inflation rate was not a result of deliberate control by the BOJ. In fact, beginning in 2013, the BOJ adopted an ultra-easy monetary policy aimed at increasing the inflation rate to its target of 2 percent. However, it ultimately failed to achieve this goal. Second, in a scenario of price stability, as envisioned by many central banks, the CPI — which indicates the average price of various goods — remains stable. However, inflation rates for individual goods may still vary from zero due to idiosyncratic supply and demand factors. This leads to fluctuations in the relative prices of different goods. In contrast, during Japan's period of near-zero inflation, the inflation rates for individual goods were also nearly zero, and this suppressed fluctuations in relative prices.

This phenomenon, referred to in this chapter as "chronic deflation," has only been observed in Japan. This limited occurrence has contributed to the incomplete understanding of its underlying mechanisms. However, with inflation returning to positive levels in 2022, there has been ongoing debate about why inflation remained near zero for the previous 30 years. Despite this discussion,

[10]The recent wage increases were supported by government initiatives. In August 2023, then-Prime Minister Kishida announced a plan to raise the minimum wage from 1,004 yen to 1,500 yen by the mid-2030s. In September 2024, Prime Minister Ishiba accelerated this plan, stating that the minimum wage would reach 1,500 yen during the 2020s. It was unprecedented for a prime minister to commit to a long-term plan for minimum wage increases, which can be seen as a form of forward guidance. With the government outlining the future trajectory of the minimum wage, labor unions — particularly those representing workers in small and medium-sized enterprises, where many employees earn close to the minimum wage — were able to adopt a more assertive stance during the spring wage negotiations. This contributed to higher wage settlements in those discussions. For further insights on using the minimum wage as a macroeconomic policy tool, see the works of de Silva et al. (2019), Glover (2019), Ascari et al. (2022), and Cuba-Borda and Singh (2024).

there is currently no established consensus on the various aspects of chronic deflation.

The first issue to consider is whether the root cause of chronic deflation lies in the labor market or the product market. This chapter presents the perspective that Japanese firms needed to limit wage increases during the spring wage offensive to enhance their international competitiveness. This wage restraint, it is argued, was the initial trigger for chronic deflation, as keeping wages stagnant year after year led to stagnant prices. However, an opposing view exists: that price stagnation was the starting issue, and wage stagnation was merely a consequence. For instance, a comprehensive review of monetary policy by the BOJ published at the end of 2024 supports this latter perspective (Bank of Japan 2024). Since wage and price stagnation occurred nearly simultaneously, identifying causality based solely on timing is difficult. Therefore, it is essential to analyze cross-sectional data, such as price and wage information by firm or industry, to uncover causal relationships.

The second issue pertains to how constrained fluctuations in relative prices have affected resource allocation, with opinions differing significantly on the matter. As discussed in this chapter, Itoh (2024) and Watanabe (2024) argue that limitations on relative price fluctuations hinder the price mechanism's functioning, thereby reducing resource allocation efficiency, particularly in areas like the labor market. BOJ Governor Ueda has also expressed similar sentiments in his speeches (Ueda 2024). Conversely, some argue that while relative price fluctuations were indeed constrained, it is uncertain whether this actually resulted in decreased allocation efficiency (e.g., Ip 2023). Moving forward, as prices and wages become more flexible and constraints on relative price fluctuations are removed, it will be crucial to verify whether resource allocation efficiency improves. This will be an important area for future research.

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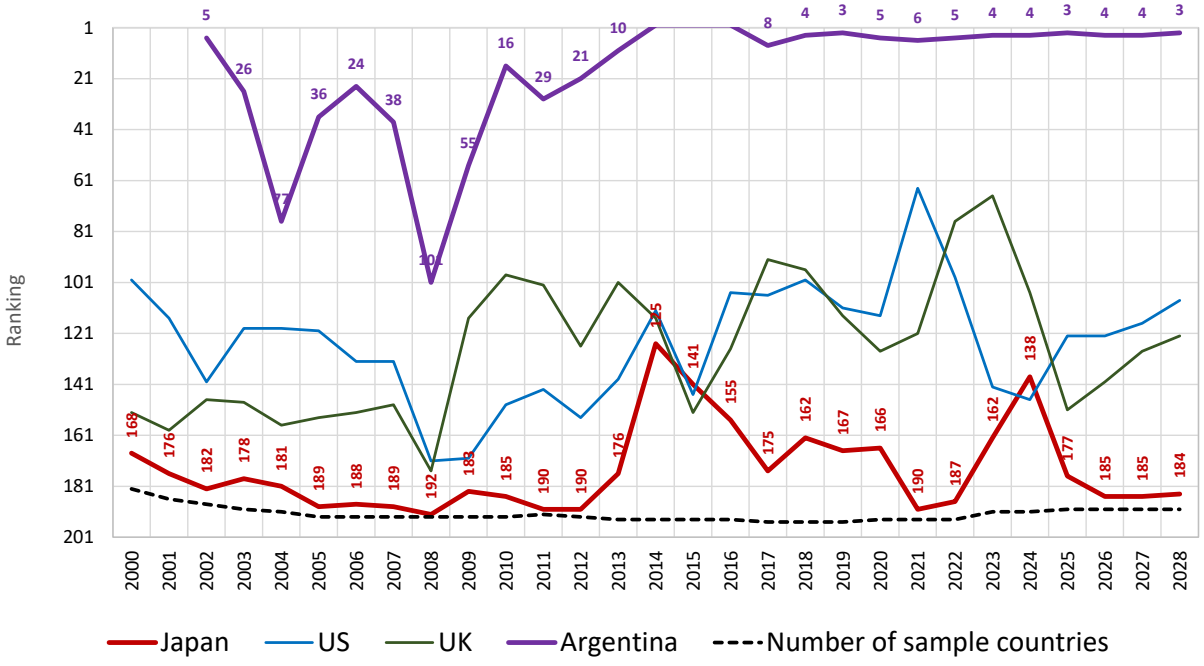
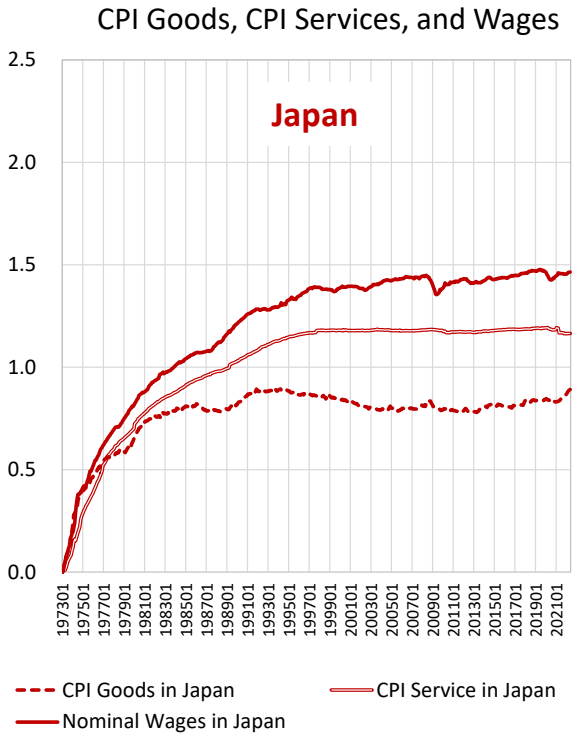
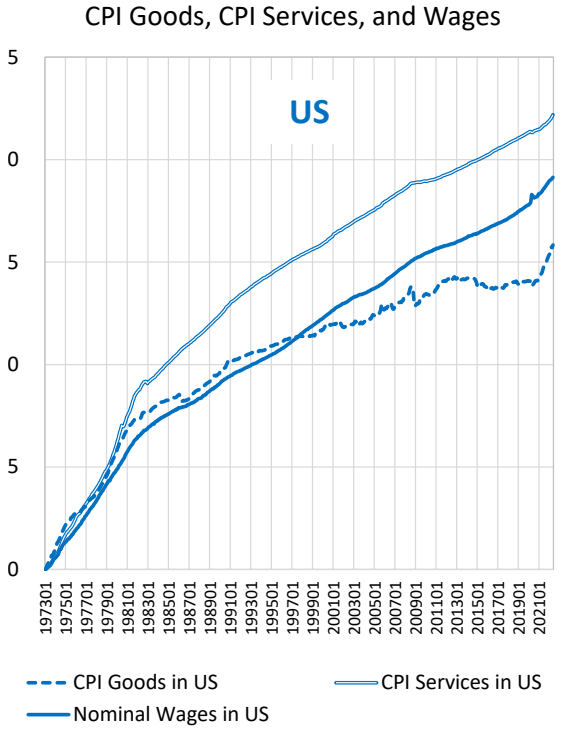
Figure 1: Japan's ranking in terms of inflation rates



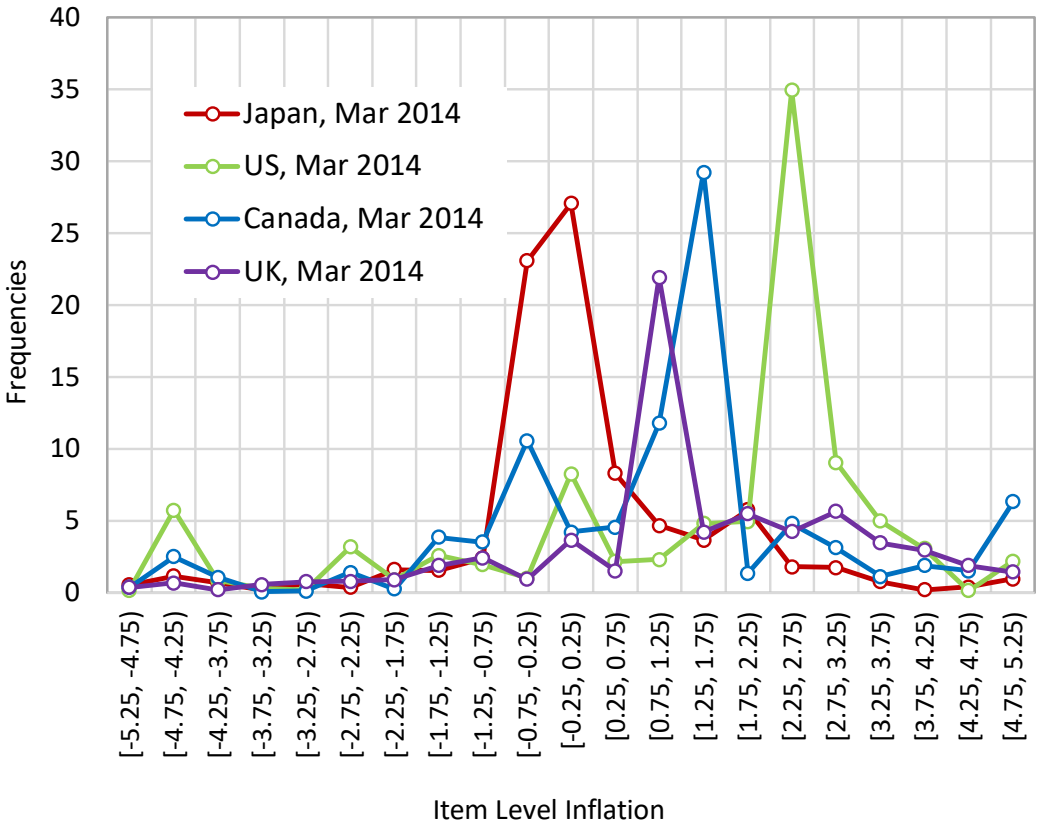

Source: IMF, World Economic Outlook Databases, October 2023

Figure 2: Prices and wages in Japan and the U.S.



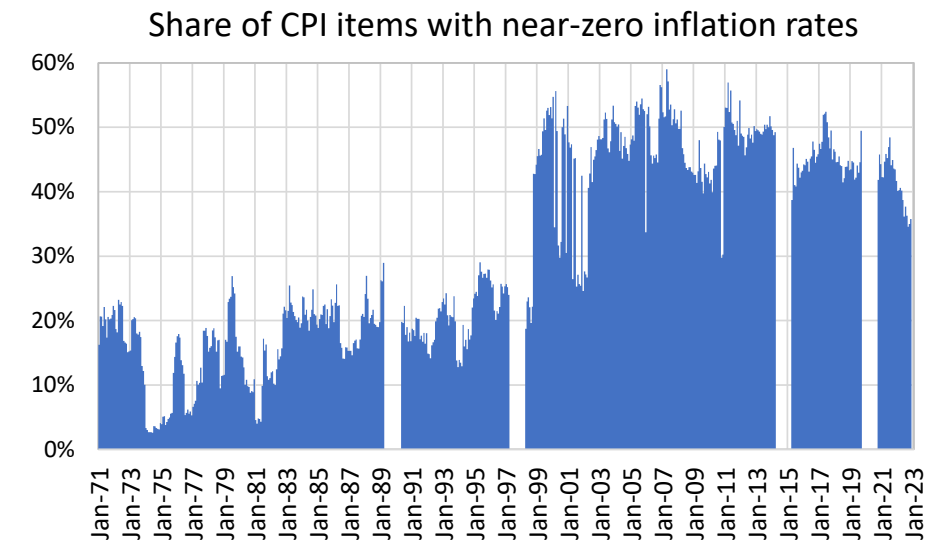



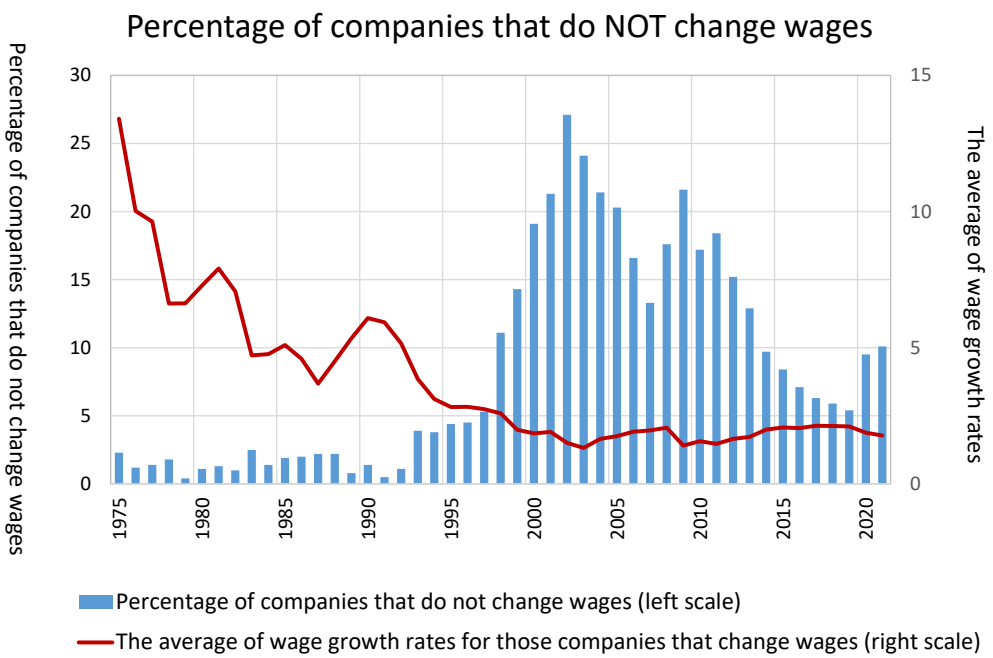
## Figure 3: Distribution of item-by-item rates of inflation in selective countries



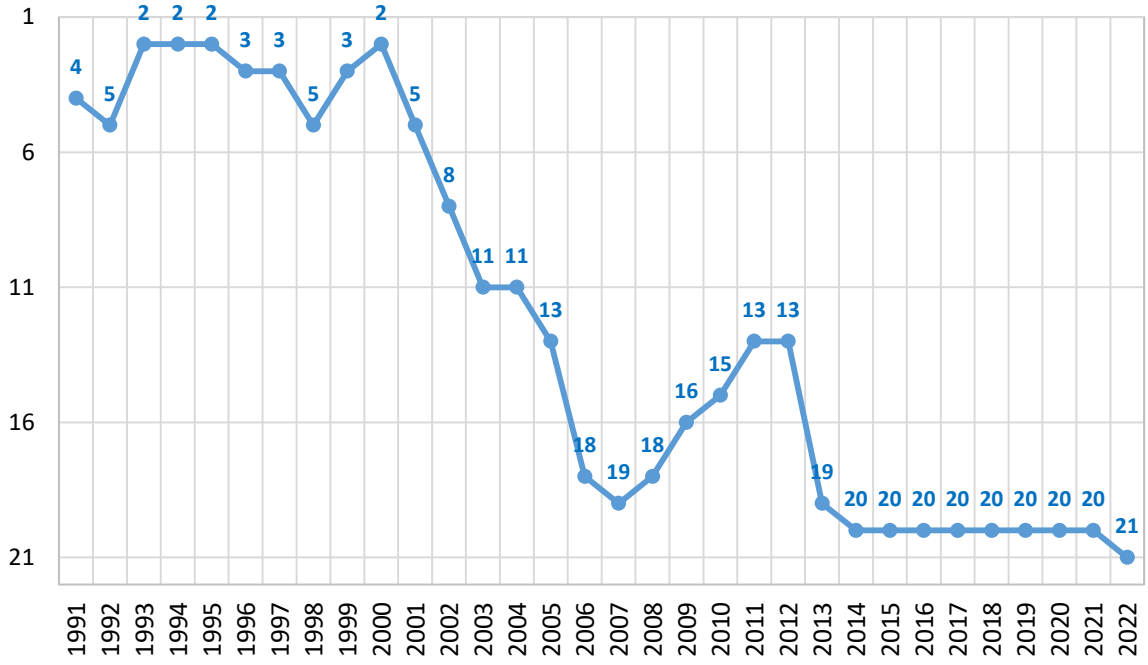

Source: Kota Watanabe, Tsutomu Watanabe, "Why Has Japan Failed to Escape from Deflation?" Asian Economic Policy Review, Vol. 13, No, 1, Jan 2018, 23-41

# Figure 4: Rigidities of prices and wages



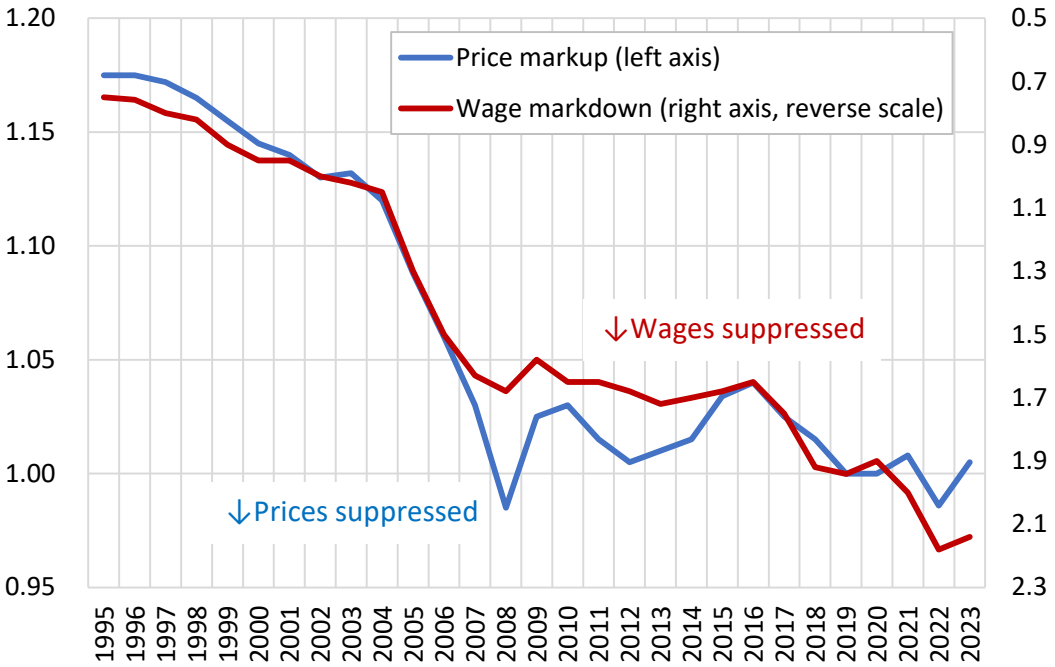



# Figure 5: Ranking of Japan’s nominal wages among OECD member countries



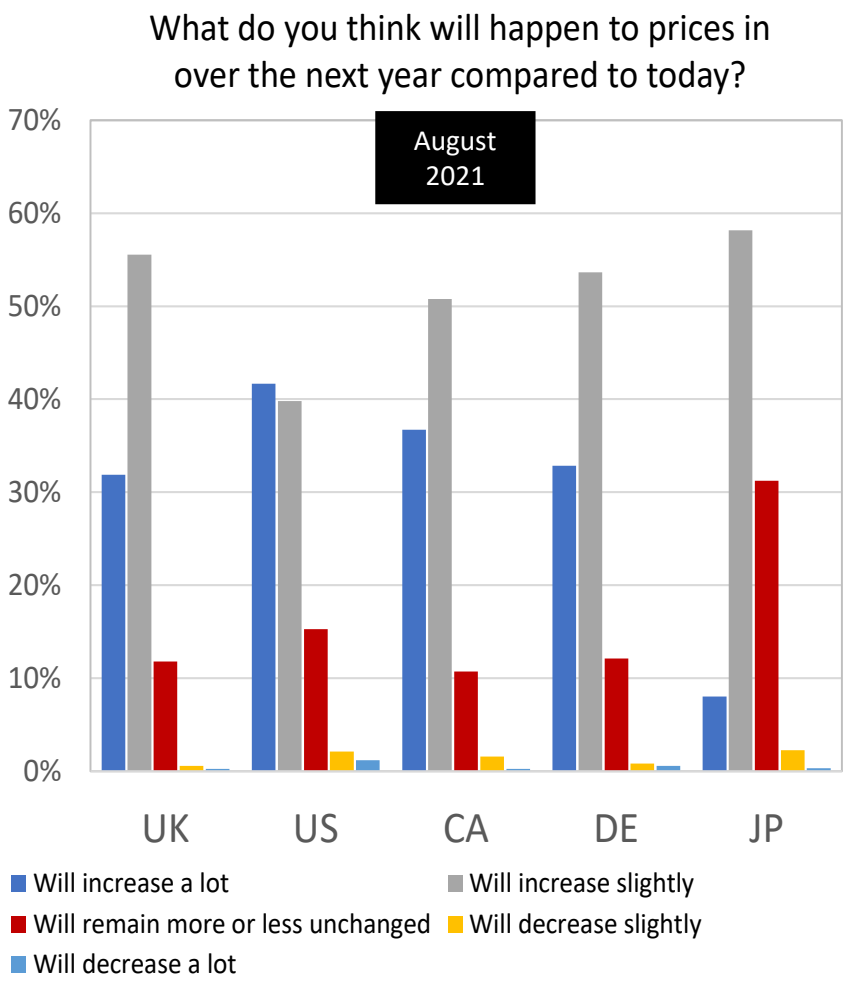

Nominal wages in each countries' local currency are converted to U.S. dollars using the exchange rate at that time, and then the ranking of each country is calculated. The figure shows the changes in Japan's ranking over time. All the data used in the calculations are obtained from the OECD.Stat.

# Figure 6: Price markups and wage markdowns

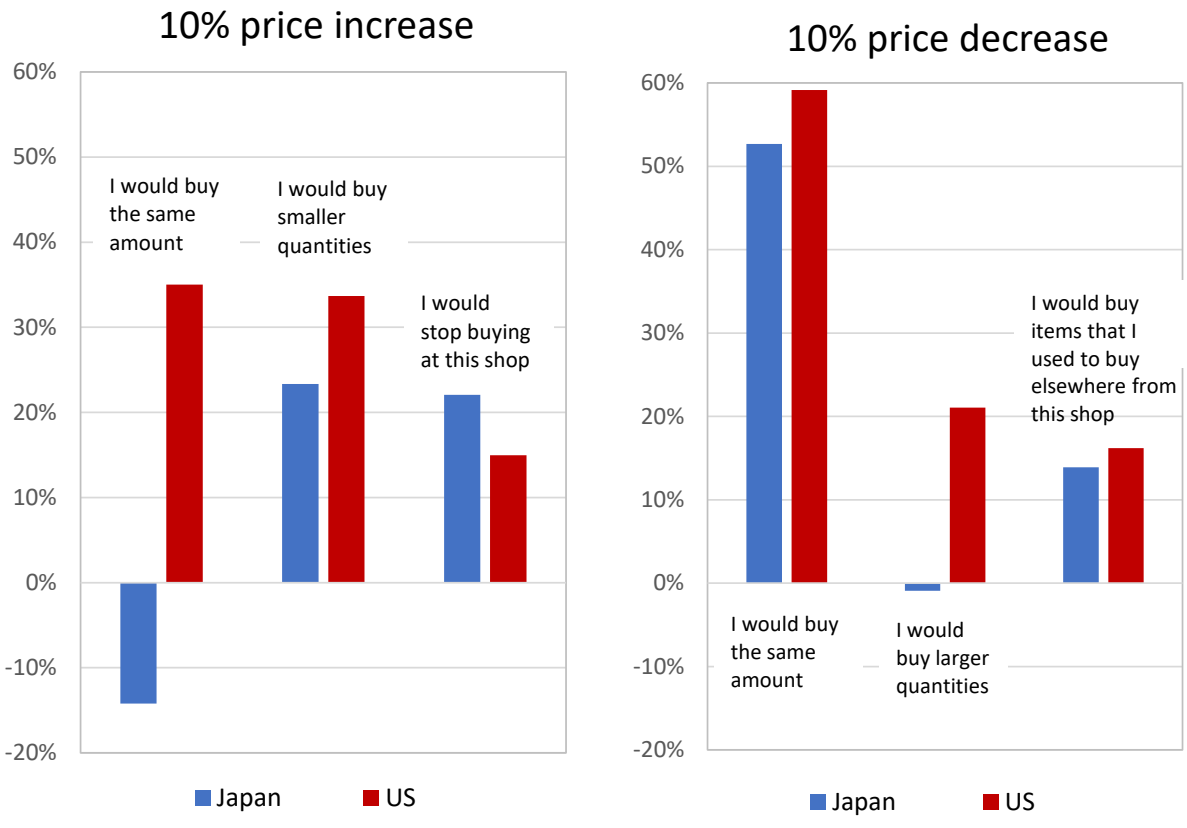



Source: Aoki, Kosuke, Yoshihiko Hogen, and Kosuke Takatomi. “Price markups and wage setting behavior of Japanese firms.” No. 23-E-5. Bank of Japan, 2023.

Figure 7: Inflation expectations in selected countries

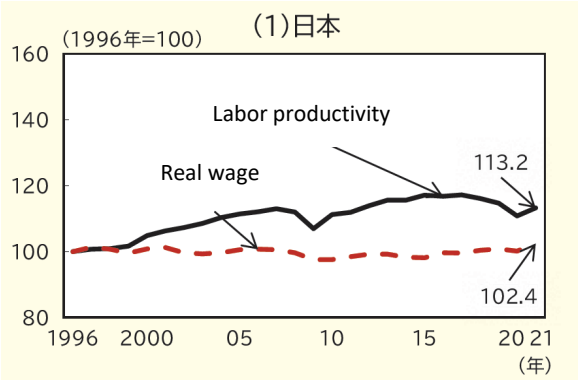


# Figure 8: Kinked demand curve

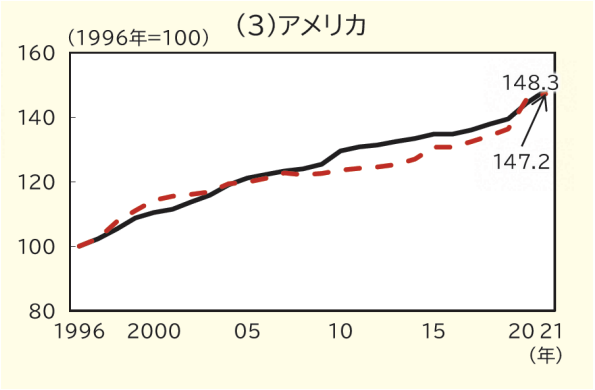


# Figure 9: Real wages and labor productivity

Japan

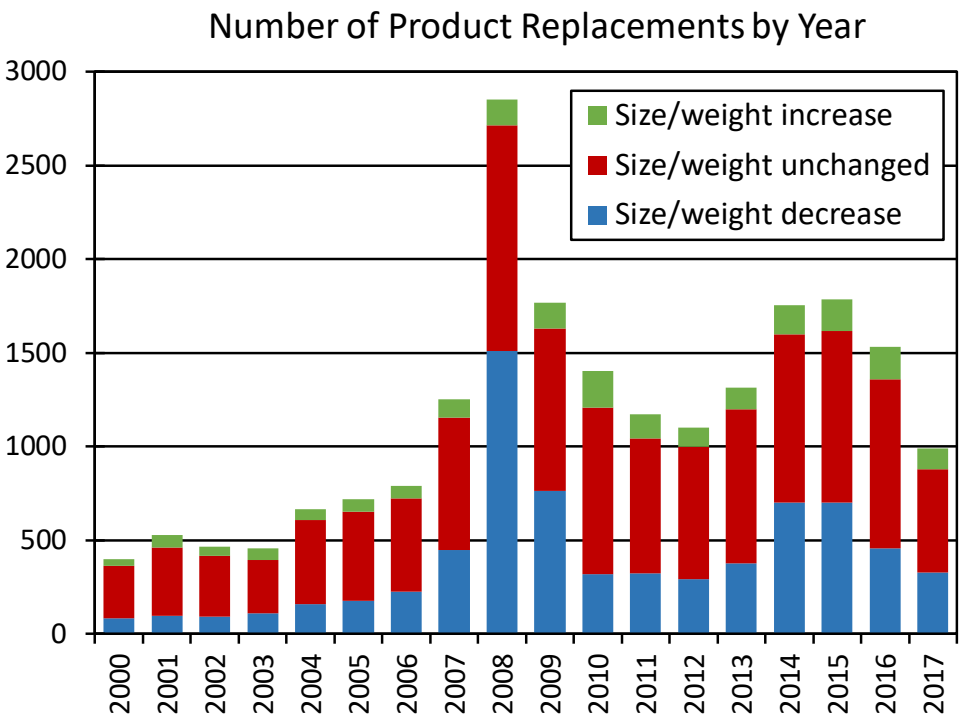



United States



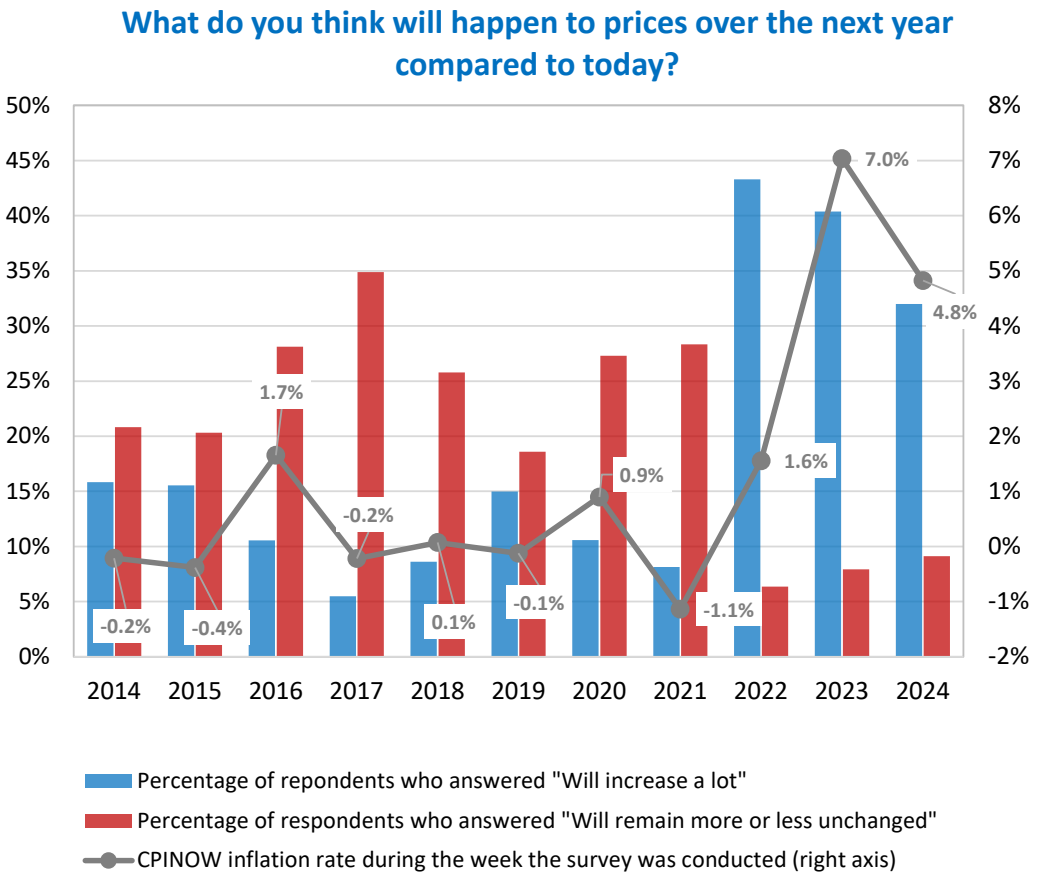

Source: Ministry of Health, Labour and Welfare, “White Paper on the Labor Economy 2023.” September 2023.

# Figure 10: Product downsizing



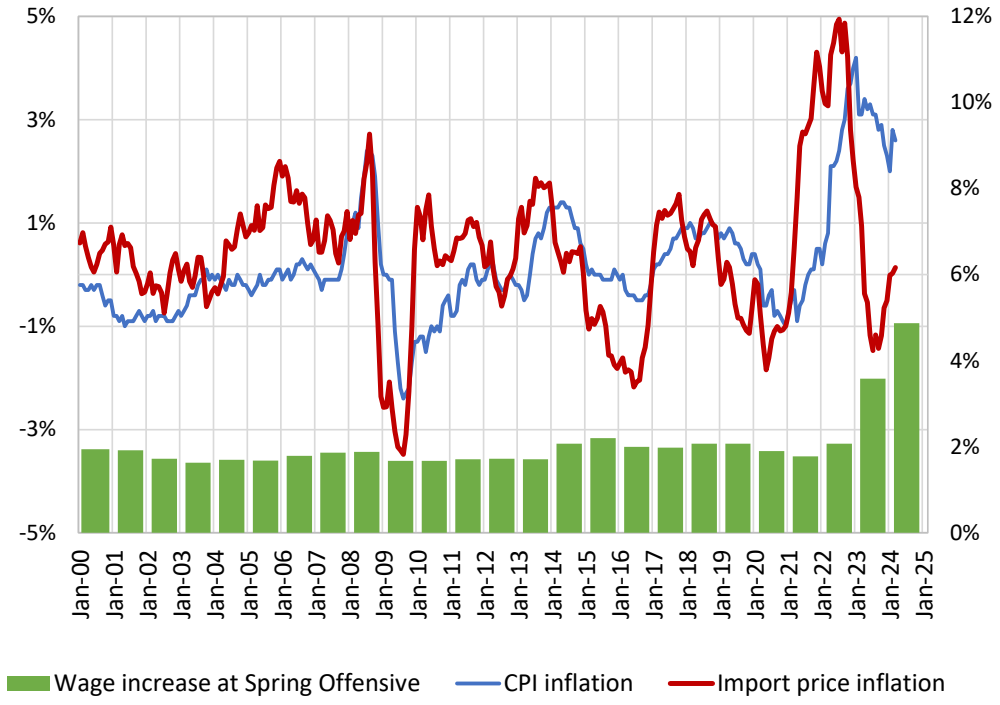

Source: Imai, Satoshi and Tsutomu Watanabe, "Product Downsizing and Hidden Price Increases: Evidence from Japan's Deflationary Period," Asian Economic Policy Review, Volume 9, Issue 1, 2014, 69-89

# Figure 11: Consumers' inflation expectations from 2014 to 2024




Note: Based on responses from 3,449 Japanese consumers who responded to the survey over 11 consecutive years from 2014 to 2024.

## Figure 12: Wage increases at spring wage offensives




Note: The wage growth rates are shown on the right scale, while consumer price inflation and import price inflation are on the left scale. However, the import price inflation rate is divided by 10 for representation.