The Korean Economic Review
Volume 42, Number 1, Winter 2026, 49-78.
DOI : 10.22841/kerdoi.2026.42.1.003

Four Key Facts of Price Changes during High Inflation in Korea and Their Implications*

Dongjae Lee** · Seoha Lim***

This paper examines how Korean firms adjusted their pricing strategies during the post-pandemic high-inflation period using microdata on goods. We document four key patterns: (1) a sharp rise in the frequency of price adjustments, (2) stability in the size of individual price changes, (3) greater use of temporary discounts, and (4) wider price dispersion across outlets. These findings indicate that frequency adjustments were the dominant margin of price setting under high inflation. To assess macroeconomic implications, we incorporate this evidence into a DSGE framework with a time-varying Calvo parameter. The model shows that inflation-dependent adjustment frequencies amplify inflationary dynamics and alter policy trade-offs, underscoring the importance of embedding empirically grounded pricing behavior into policy analysis.

JEL Classification: E30, E31, E37, E50, E52
Keywords: Price-setting Behavior, Inflation Dynamics, Price Stickiness, State-dependent Pricing, Nonlinear DSGE Model, Phillips Curve

Received: Dec. 26, 2024. Revised: Oct. 28, 2025. Accepted: Nov. 26, 2025.

* This work is a revised and expanded version of the authors' earlier working paper, BOK Issue Note 2024-7. The views expressed in this paper are solely those of the authors and do not necessarily reflect the views of the Bank of Korea. We thank Dr. Changhyun Park and Dr. Jungick Lee of the Bank of Korea for their invaluable advice and encouragement throughout the development of this study. We are also grateful to Monetary Policy Board Member Yongsung Jang of the Bank of Korea and Professor Woongyong Park for their insightful comments on the paper. In addition, we extend our appreciation to the Co-Editor, Yoonsoo Lee and anonymous referees for their constructive comments and suggestions.

** First Author, Corresponding Author, Economist, Incheon Branch, Bank of Korea, 10 Inhang-ro Jung-gu, Incheon 22333, Korea, e-mail: dongjae.lee@bok.or.kr

*** Co-Author, Junior Economist, Human Resources Management Team, Bank of Korea, e-mail: lim.seoha@bok.or.kr

I. Introduction

Firms adjust their product prices based on factors like production costs and shifts in demand, ultimately impacting consumer prices. Understanding these price adjustments is crucial for analyzing inflation, predicting trends, and evaluating the effectiveness of monetary policies. Furthermore, firms' pricing strategies play a significant role in transmitting economic shocks to inflation and the real economy, providing valuable insights for macroeconomic analysis and policy-making.

In this context, significant research has been conducted using microdata, such as raw data from consumer and producer price indices, surveys, and scanner data, to explore how firms adjust their prices. For instance, Klenow and Malin (2010) provides a comprehensive survey of this literature. A common finding across studies is that firms do not adjust prices with every change in costs, demand, or competition. Price stickiness is evident, with prices typically updated on a 9- to 12-month cycle in the U.S. and European economies.

Price-setting behavior can vary significantly depending on inflation levels. In stable-inflation environments, firms often focus on long-term relationships and cost-saving strategies, adjusting prices less frequently. This stability is driven by predictable production costs, competitive pricing, and well-anchored inflation expectations. In contrast, during periods of high inflation, increasing raw material costs and wages, together with competitors' pricing strategies, often compel firms to adjust their prices more frequently, particularly in response to substantial cost burdens or heightened demand. From a theoretical standpoint, menu-cost (S, s) models imply that higher trend inflation and greater idiosyncratic volatility elevate the hazard of adjustment (Golosov and Lucas Jr (2007); Vavra (2014)). Recent studies (e.g., Montag and Villar Vallenas, 2023; Bunn et al., 2022; Gautier et al., 2024; Rudolf and Seiler, 2022) highlight notable changes in pricing strategies during such periods of high inflation.

While much of the existing literature has focused on the pricing behaviors of firms in the U.S. and European economies, research on this topic in Korea—both during normal economic conditions and high inflation periods—remains limited. This is primarily due to the lack of accessible product-level price data, which makes it difficult to analyze firms' pricing behaviors in detail. As a result, most macroeconomic models for the Korean economy rely heavily on findings from the U.S. After the pandemic, Korea faced its highest inflation since 1980, highlighting the urgent need to explore how Korean firms adjust their prices under such significant inflationary pressures. This gap in the literature underscores the importance of studying the pricing dynamics of Korean firms in both stable and inflationary periods.

This paper contributes to the literature by documenting the micro-level price adjustment behaviors of Korean firms during periods of high inflation. Using bi-weekly product price survey data from the Korea Consumer Agency, we document four correlational patterns in firms' pricing behavior during the high-inflation episode: (i) the frequency of price changes—predominantly increases—rose markedly; (ii) the average size of individual changes remained stable; (iii) the incidence of temporary discounts increased; and (iv) cross-outlet price dispersion widened.[1]

Changes in firms' price-setting behavior are associated with important macroeconomic implications. If high inflation persists and these patterns continue, expectation dynamics may become self-reinforcing, complicating a return to low and stable inflation. Moreover, variation in pricing practices can alter overall price stickiness, implying a state-dependent Phillips-curve slope. Consequently, shock transmission—and the effectiveness of monetary and fiscal policies—may differ across inflation level.

To explore these macroeconomic implications, we extend the standard New Keynesian DSGE framework by introducing a mechanism that dynamically adjusts the frequency of firms' price changes based on inflation levels. Standard models, based on time-dependent pricing (Calvo, 1983), assume regular, fixed intervals between price changes. Our empirical findings on the pricing strategies of Korean firms lead us to construct a hybrid model that integrates Calvo pricing with a state-dependent mechanism. This redefines the Calvo parameter as a dynamic function of inflation, allowing for meaningful comparisons with traditional models and producing simulation results that significantly differ from conventional predictions.

Our analysis demonstrates that incorporating Korean firms' observed changes in price adjustment behavior fundamentally reshapes the dynamics of aggregate variables. Larger shocks increase both inflation and the frequency of price adjustments, amplifying inflationary pressures (size effect). At high inflation levels, identical cost shocks translate into stronger price pass-through (state dependence). Cost shocks—particularly during periods of elevated inflation—require stronger monetary tightening, which in turn leads to greater output losses. Importantly, this mechanism is asymmetric: while large inflationary shocks significantly accelerate price dynamics, deflationary shocks have only a limited impact on reducing inflation through the frequency-change channel. As a result, the Phillips curve implied by our model takes on a nonlinear, inverted L-shape, contrasting sharply with traditional linear specifications. This framework helps explain the post-pandemic inflation surge, which conventional models failed to anticipate. More broadly, it underscores the importance of embedding firms' price-setting behavior into policy analysis, particularly in times of severe shocks or high inflation. Such an approach offers valuable insights for economies increasingly exposed to large disruptions, including

---

[1] In line with much of the micro–price literature (e.g., Bils and Klenow (2004); Nakamura and Steinsson (2008)), our analysis characterizes associations rather than identified causal effects.

supply chain breakdowns and natural disasters.

The remainder of this paper is organized as follows. Section 2 reviews the literature related to this study. Section 3 introduces the data and methods used. Section 4 outlines the key characteristics of price adjustment behavior during high inflation in Korea. Section 5 introduces a nonlinear DSGE model that incorporates state-dependent pricing frequencies. Section 6 presents the main results and discusses their broader macroeconomic implications, and Section 7 provides concluding remarks.

II. literature review

Our research builds on a series of studies that document firms' price adjustment patterns using microdata (e.g., Bils and Klenow (2004), Alvarez et al. (2006), and Nakamura and Steinsson (2008)). It is closely related to recent investigations into changes in firms' price adjustment behavior during the high inflation period following the pandemic. For instance, Montag and Villar Vallenas (2023) found that, in the U.S., the frequency of price adjustments doubled from approximately 10% pre-pandemic to 20% during the high inflation period, while the magnitude of these adjustments remained largely unchanged. Similarly, Bunn et al. (2022), Gautier et al. (2024), and Rudolf and Seiler (2022) reported shifts in price adjustment behaviors in various European countries. Although the frequency of firms' price changes is a critical factor in understanding price stickiness in the broader economy, documented evidence of these patterns among Korean firms is scarce. An exception is found in Lee and Kang (2020), which explored pricing behavior during a low-inflation environment in Korea. They suggested that in a low-inflation environment, firms tend to decrease the frequency of price adjustments while increasing the magnitude of each adjustment. Building on these studies, we use micro-level data on individual products in Korea to document price adjustment patterns during the post-pandemic high-inflation period.

Our work contributes to the literature attempting to extend the firm pricing component of the standard New Keynesian model. In the standard model, the firm's price-setting is typically assumed to involve time-dependent price adjustment (Calvo (1983)) or adjustments based on costs (Rotemberg (1982)). In most cases, the probability or cost of adjustment is assumed to be fixed, implying that the firm's price adjustment behavior remains unchanged regardless of economic conditions.[2] To overcome these limitations, Davig (2016) extends the standard Rotemberg-style

[2] This is primarily because most macroeconomic models incorporating price rigidity rely on linearization techniques, which analyze dynamics in proximity to the steady state. Near the steady state, it is often assumed that firms' pricing patterns remain unchanged. However, with recent advancements in computational methods, research has increasingly shifted toward exploring nonlinear dynamics beyond the steady state.

nominal friction framework by allowing price adjustment costs to vary with economic conditions. Similarly, Gasteiger and Grimaud (2023) extend the Calvo framework by introducing changing adjustment frequencies and analyze the policy implications and empirical consistency of such models. Our model shares with Gasteiger and Grimaud (2023) the premise that price-adjustment probabilities depend on inflation. While they refine the specification of this mechanism and show that it can match key macro moments without resorting to implausibly large cost-push shocks or nominal rigidities, our emphasis differs. We discipline the inflation–frequency link with Korean micro evidence on firm-level adjustment behavior, embed it in a standard model, and analyze the policy implications of the resulting nonlinearity.[3]

Lastly, our study contributes to work on nonlinear Phillips-curve dynamics. Recent empirical studies (e.g., Babb and Detmeister (2017), Gagnon and Collins (2019), Hooper et al. (2020)) document nonlinearity, with pre-surge analyses emphasizing flattening in downturns due to downward price/wage rigidity and asymmetric adjustment costs. Subsequent research points to mechanisms that can steepen the curve—capacity constraints (Boehm and Pandalai-Nayar (2022)), quasi-kinked demand schedules (Harding et al. (2023)), asymmetric adjustment cost (Cao et al. (2023)), and labor-market structures (Benigno and Eggertsson (2023))—often yielding an inverted L shape but typically without time-varying price-change frequencies. Using Korean data, we show that incorporating the observed variation in firms' price adjustment frequency by inflation level into a standard framework can largely account for such an inverted L-shaped Phillips curve.[4]

III. The data

To analyze the price changes of individual products, we utilized the product-level price data provided by the Korea Consumer Agency's Price Information Service.[5] The Korea Consumer Agency surveys the actual retail prices of non-durable and

[3] One point we would like to make clear at the outset is that our approach differs from the literature that uses models to match and explain firms' changes in price adjustment behavior. For example, Nakamura and Steinsson (2010) show that *S*s-type menu cost models, in which firms face fixed costs of price adjustment, can replicate a wide range of micro-level pricing pattern. Within this framework, Vavra (2014) demonstrates that an increase in idiosyncratic volatility reduces price rigidity by raising the frequency of price changes. While these studies successfully explain why changes in the frequency of price adjustments occur, they place secondary emphasis on the implications of such changes. In contrast, our research focuses less on the theoretical underpinnings of why firms alter their price adjustment patterns, and more on the macroeconomic implications of these changes.

[4] Gasteiger and Grimaud (2023) also demonstrate that introducing a time-varying Calvo parameter can generate a nonlinear Phillips curve. However, their analysis does not directly link this mechanism to observed firm-level price adjustment patterns.

[5] Data source: https://www.price.go.kr

semi-durable goods, such as processed foods and household goods, sold in approximately 500 retail outlets (including supermarkets, convenience stores, and department stores) on a bi-weekly basis.[6] The dataset records detailed information for each observation, including the product name, price, outlet, and survey date, and accounts for price adjustments arising from temporary discount events. The data spans categories such as food and beverages, household goods, and miscellaneous products, collectively representing about 20% of the total consumer price index.[7]

Given the frequent changes in products, outlets, and survey cycles, the analysis period was set from February 2018 to the most recent data available as of September 2024.[8] Products from the agricultural, forestry, and fishery sectors, known for significant price volatility and limited relevance to firms' pricing strategies, were excluded. Additionally, products with observation discontinuities (missing data for two or more months) or changes in weight were excluded.[9] This resulted in a final selection of 209 products.

For each product, the mode of prices across all retail outlets was defined as the representative selling price (hereinafter referred to as the "price") of the product.[10] This price includes temporary price adjustments, such as retailer discounts. To analyze underlying price changes, we applied the methodology of Karadi et al. (2023), defining the "regular price" as the most frequently observed value within two months before and after each survey point, including the survey moment itself. Figure 1 illustrates examples of both prices and regular prices. While prices, including temporary adjustments, tend to fluctuate frequently, regular prices smooth out these temporary effects. Additionally, the figure highlights that pricing patterns are heterogeneous across items.

---

[6] Until 2021, the data was surveyed weekly, but starting in 2022, surveys became bi-weekly. To maintain consistency in the analysis, only bi-weekly data prior to 2022 was used.

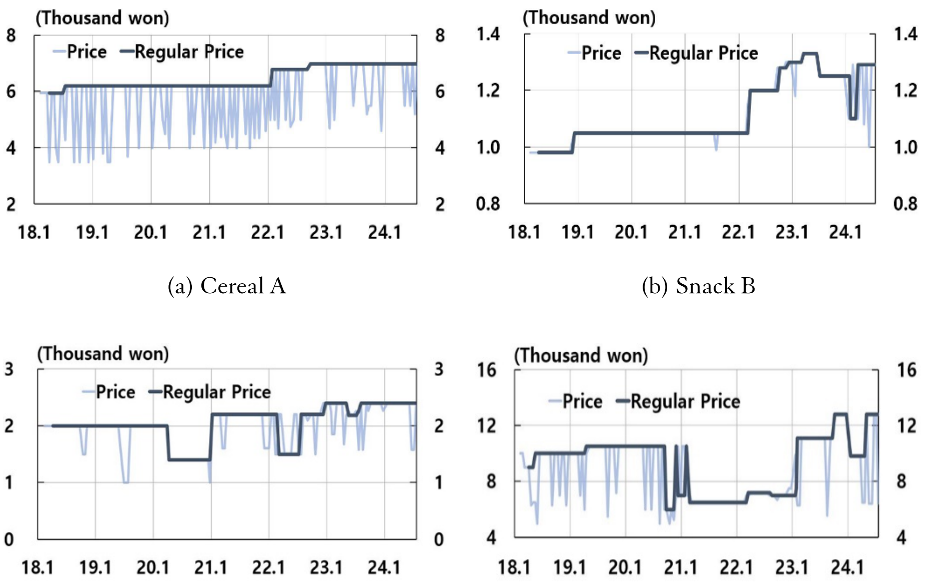
[7] This study focuses on firms' price adjustment behavior, based on non-durable items. The key characteristics of the analysis are expected to align closely with patterns observed in the overall consumer price index, and similar behaviors are likely to be found in categories beyond non-durables. For more details, refer to the Lee and Lim (2024).

[8] Price data has been available since 2014; however, substantial changes in the surveyed outlets and items were implemented in February 2018. To maintain consistency and reliability, the analysis focuses exclusively on data from this period onward.

[9] Temporary missing values of less than two months were interpolated if the price remained unchanged before and after the missing period. Even without these adjustments, the analysis results did not change significantly.

[10] This method captures the prices most likely observed by consumers in daily life, which can be interpreted as the most probable price. However, the price derived in this way may differ somewhat from the actual prices set by individual production firms. To ensure robustness, we also calculated the representative price using the median price across outlets, and this approach did not alter the results presented in this paper.

[Figure 1] Examples of regular prices and prices



(a) Cereal A

(b) Snack B

(c) Drink C

(d) Condiment D

The frequency and size of product price adjustments were estimated following the methodology of Lee and Kang (2020). Adjustment frequency refers to the probability that a specific product's price changes, either increasing or decreasing, over a given period. The frequencies of price increases ($f_{i,t}^{+}$) and decreases ($f_{i,t}^{-}$) for a product i in a given quarter t are defined as follows:

$$f_{i,t}^{+} = \frac{\sum_n 1(\Delta p_{i,t_n}>0)}{\sum_n 1(\Delta p_{i,t_n}>0)+\sum_n 1(\Delta p_{i,t_n}<0)+\sum_n 1(\Delta p_{i,t_n}=0)} \tag{1}$$

$$f_{i,t}^{-} = \frac{\sum_n 1(\Delta p_{i,t_n}<0)}{\sum_n 1(\Delta p_{i,t_n}>0)+\sum_n 1(\Delta p_{i,t_n}<0)+\sum_n 1(\Delta p_{i,t_n}=0)} \tag{2}$$

Here, p_{i,t_n} is the n th observation of the product i in the quarter t, and $\Delta p_{i,t_n}$ is the change in the price of product i compared to the previous observation.

The size of price increases (dp_{i,t_n}^{+}) and decreases (dp_{i,t_n}^{-}) for a product i in the quarter t are defined as:

$$dp_{i,t_n}^{+} = \frac{\sum 1(\Delta p_{i,t_n}>0)\cdot \Delta p_{i,t_n}}{\sum 1(\Delta p_{i,t_n}>0)} \tag{3}$$

$$dp^{-}_{i,t_n} = \frac{\sum 1(\Delta p_{i,t_n}<0) \cdot \Delta p_{i,t_n}}{\sum 1(\Delta p_{i,t_n}<0)} \tag{4}$$

The average frequencies of price increases (f_t^{+}) and decreases (f_t^{-}), and the average rates of price increases (dp_t^{+}) and decreases (dp_t^{-}) were calculated by averaging across all products.

To facilitate comparison with results from existing literature, the quarterly adjustment frequency was converted into a monthly adjustment frequency using the following method:[11]:

$$\text{Monthly increase frequency in quarter } t = 1 - (1 - f_t^{+})^2 \times 100 \tag{5}$$

$$\text{Monthly decrease frequency in quarter } t = 1 - (1 - f_t^{-})^2 \times 100 \tag{6}$$

IV. Four facts of price change during high inflation period

In stable-inflation environments, firms prioritize long-term customer relationships and cost reduction over frequent price adjustments, largely due to low production costs, competitive pricing, and stable inflation expectations. In contrast, high-inflation environments are characterized by increased changes in firms' pricing behaviors, driven by rising raw material costs, higher wages, and an overall atmosphere of price increases. This section explores how domestic firms adjusted prices during the high-inflation period after the pandemic, leveraging microdata to estimate the frequency and magnitude of price changes.

High inflation is defined as an annual inflation rate exceeding 2.5 percent, and stable inflation refers to a rate of 2.5 percent or lower. Based on this criterion, the period from 2021 Q3 to 2024 Q2 is classified as a high-inflation period, and the period from 2018 Q2 to 2021 Q2 is classified as a stable-inflation period in our dataset.[12]

Characteristic 1: Increase in Regular Price Adjustment Frequency

The frequency of regular price adjustments among domestic firms increased markedly during the post-pandemic high-inflation period, rising

[11] Since the data was surveyed bi-weekly, the probability of not adjusting prices in both surveys within a month was subtracted from 1 to calculate the monthly adjustment frequency.

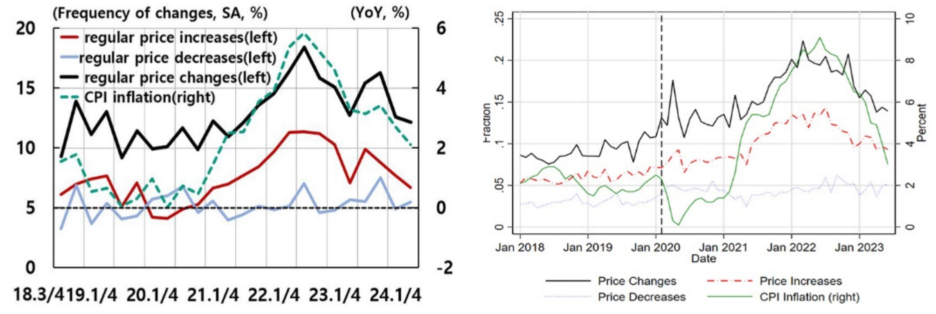
[12] For clarity, the 2.5% split is intended only to present the results in a more quantified and distinguishable way. It does not indicate a discrete regime break, and the underlying relationship remains continuous, as shown in Figure 3.

from an average monthly rate of 10.9% to 15.3%, and shortening the average duration of unchanged prices from approximately 9.2 months to 6.5 months (see Table 1). This increase was largely driven by a rise in the frequency of price hikes, with little to no change observed in the frequency of price reductions (see Figure 2.a). The frequency of price adjustments peaked in the third quarter of 2022, coinciding with the highest recorded CPI inflation rate of 5.8%. While the frequency of price increases has shown a declining trend since the latter half of 2022, it remains elevated compared to historical levels. Our findings are consistent with those of Montag and Villar Vallenas (2023), who reported a similar trend in U.S. data. In the United States, the frequency of price adjustments increased from approximately 10% pre-pandemic to over 20%, primarily due to more frequent price hikes, reflecting patterns comparable to those in Korea (see Figure 2.b). As illustrated in Figure 3.a, the frequency of price increases is positively correlated with consumer price levels, whereas the frequency of price reductions remains relatively constant, regardless of changes in consumer price levels.

[Table 1] Monthly Frequency of Regular Price Change

Category	Monthly Frequency of Increase			Monthly Frequency of Decrease			Monthly Frequency of Price Adjustment		
	High-inflation	Stable-inflation	Total	High-inflation	Stable-inflation	Total	High-inflation	Stable-inflation	Total
Household Items	7.4	5.5	6.4	4.1	3.9	4.1	11.5	9.4	10.4
Instant/ Frozen Food	9.5	7.2	8.1	5.6	5.7	5.5	15.1	12.9	13.6
Hygiene Products	8.9	6.3	7.2	8.9	6.6	7.3	17.9	12.8	14.5
Tea and Beverages	11.6	7.1	9.0	7.8	5.1	6.2	19.4	12.2	15.2
Grain Products	9.2	6.4	7.7	6.2	4.3	4.7	15.4	10.6	12.4
Alcoholic Beverages	4.0	3.1	3.6	1.5	1.3	1.3	5.5	4.4	5.0
Snacks/ Ice Cream	7.6	6.8	7.3	4.9	6.1	5.6	12.5	12.9	12.9
Seafood Products	8.3	5.0	6.7	4.7	5.6	5.1	13.1	10.6	11.8
Meat Products	9.7	2.3	5.4	5.6	1.8	3.1	15.3	4.1	8.6
Seasoning/ Sauces	12.4	6.2	8.7	6.3	5.0	5.3	18.7	11.3	13.9
Total	9.4	6.1	7.5	5.9	4.9	5.2	15.3	10.9	12.7

[Figure 2] Frequency of Regular Price Changes



(a) Korea (b) The U.S

Data: (a) Korea Consumer Agency, Author's calculation,
(b) from Montag and Villar Vallenas (2023) pg.4, [Figure 1]

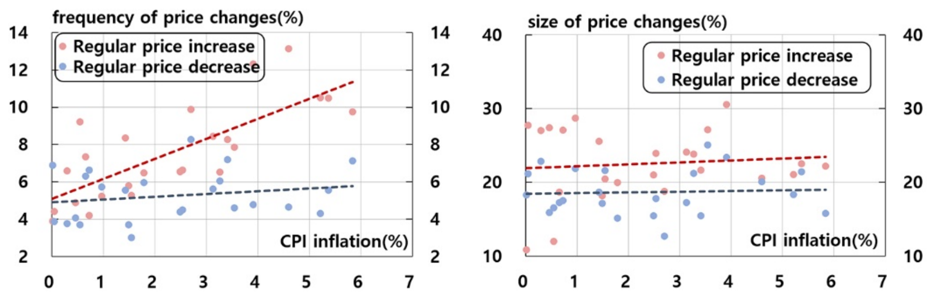
Characteristic 2: Minor Changes in Size of Regular Price changes

The size of regular price adjustments exhibited remarkable stability, unlike the frequency of adjustments, which changed significantly. During the high-inflation period, the average size of price increases was 22.8%, almost unchanged from 22.0% in the stable inflation period. Similarly, the average size of price decreases during the high-inflation period, at 18.7%, remained comparable to 18.4% in the stable inflation period (see Table 2). As illustrated in Figure 3.b, the size of both price increases and decreases remained consistent regardless of the inflation rate.

[Table 2] Size of Regular Price Changes

Category	Size of Price Increase			Size of Price Decrease		
	High-inflation	Stable-inflation	Total	High-inflation	Stable-inflation	Total
Household Items	31.9	17.7	23.9	18.0	17.7	17.8
Instant/Frozen Food	18.5	23.9	21.5	19.3	16.1	17.5
Hygiene Products	46.1	33.6	39.1	27.8	20.9	23.9
Tea and Beverages	21.3	23.8	22.7	17.5	21.4	19.7
Grain Products	15.4	16.0	15.8	11.4	11.0	11.2
Alcoholic Beverages	2.5	5.1	4.0	1.9	1.3	1.5
Snacks/Ice Cream	21.4	23.7	22.7	14.1	21.1	18.0
Seafood Products	27.4	15.3	20.6	14.5	12.4	13.3
Meat Products	17.8	8.0	12.3	16.6	6.6	11.0
Seasonings/Sauces	22.1	15.2	18.2	19.2	16.6	17.7
Total	22.8	22.0	22.4	18.7	18.4	18.5

[Figure 3] Frequency and size of Regular Price Changes

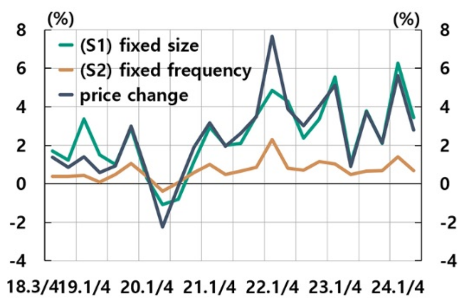


(a) Frequency of changes and inflation (b) Size of changes and inflation

Data: Korea Consumer Agency, Statistics Korea, Author's calculation

Price changes can be attributed to two key factors: frequency and size. Using the methodology of Montag and Villar Vallenas (2023) and Lee and Kang (2020), we decomposed the variability in regular prices into contributions from these two components, assuming other factors remain fixed at their average levels. Our results show that the majority of the variability in regular prices during the high-inflation period was driven by changes in the frequency of adjustments rather than their size (see Figure 4).[13]

[Figure 4] Decomposition of the Regular Price Changes



Data: Korea Consumer Agency, Author's calculation

---

[13] The sum of the contributions from size and frequency at any point in time does not fully account for the total change in regular prices. For details, refer to Appendix A, "Decomposition of Factors in Regular Price Variability."

Characteristic 3: Increase in Temporary Price Adjustments but Not in Size

During periods of high inflation, the frequency of price adjustments, including temporary changes such as discounts, increased significantly. The frequency of price increases rose by 6.0 percentage points, from 19.2% to 25.2%, while the frequency of price decreases increased by 3.5 percentage points, from 18.8% to 22.3% (see Table 3).

In contrast, the size of these changes, including temporary discounts, did not show significant variation. During the high-inflation period, the average size of price increases was 28.8%, a slight decrease from 29.9% during the stable inflation period. Similarly, the average size of price decreases during the high-inflation period was 19.5%, remaining comparable to 20.4% in the stable inflation period (see Table 4).

[Table 3] Monthly Frequency of Price Changes (Including Temporary Discounts)

Category	Monthly Frequency of Increase			Monthly Frequency of Decrease			Monthly Frequency of Price Adjustment		
	High-inflation	Stable-inflation	Total	High-inflation	Stable-inflation	Total	High-inflation	Stable-inflation	Total
Household Items	22.3	19.7	20.9	18.1	18.2	18.2	40.4	37.9	39.0
Instant/ Frozen Food	26.9	24.3	25.5	23.5	23.6	23.6	50.4	47.9	49.0
Hygiene Products	27.6	22.7	24.9	28.1	24.1	25.8	55.6	46.8	50.7
Tea and Beverages	28.2	20.9	24.1	25.4	19.2	21.9	53.6	40.1	46.0
Grain Products	26.2	25.6	25.9	23.7	26.1	25.0	49.9	51.7	50.9
Alcoholic Beverages	9.4	5.1	7.0	6.5	3.3	4.7	15.9	8.3	11.7
Snacks/ Ice Cream	23.1	19.8	21.3	21.0	19.9	20.4	44.1	39.8	41.7
Seafood Products	21.5	14.8	17.7	17.3	17.4	17.3	38.8	32.2	35.1
Meat Products	22.6	7.7	14.2	20.5	7.7	13.3	43.1	15.3	27.6
Seasoning/ Sauces	28.5	14.7	20.7	24.4	14.4	18.8	52.9	29.1	39.6
Total	25.2	19.2	21.8	22.3	18.8	20.4	47.5	38.1	42.2

[Table 4] Size of Price Changes(Including Temporary Discounts)

Category	Size of Price Increase			Size of Price Decrease		
	High-inflation	Stable-inflation	Total	High-inflation	Stable-inflation	Total
Household Items	36.2	29.1	32.2	25.4	21.9	23.4
Instant/Frozen Food	25.7	28.4	27.2	19.3	19.3	19.3
Hygiene Products	49.7	45.8	47.5	28.7	25.3	26.8
Tea and Beverages	23.0	26.3	24.8	16.8	19.2	18.2
Grain Products	20.8	27.3	24.4	16.5	19.4	18.1
Alcoholic Beverages	5.9	5.0	5.4	4.0	2.6	3.2
Snacks/Ice Cream	26.0	29.3	27.8	16.4	20.2	18.5
Seafood Products	28.2	35.1	32.1	19.6	19.1	19.3
Meat Products	25.1	20.9	22.8	16.6	15.7	16.1
Seasonings/Sauces	29.5	32.0	30.9	17.9	22.0	20.2
Total	28.8	29.9	29.4	19.5	20.4	20.0

Characteristic 4: Greater Price Dispersion Across Outlets

The New Keynesian literature suggests that, in a high inflation environment, the prices of identical goods can vary significantly because sellers who adjust prices tend to set them further from the average price. This behavior leads to a wider dispersion of prices for identical goods across different sellers. Such increased price dispersion results in an inefficient allocation of resources among firms, ultimately lowering aggregate welfare.

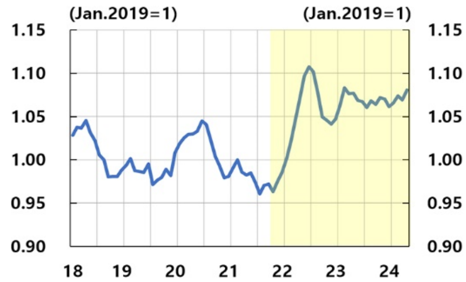
We analyzed item-level price dispersion for identical products across different outlets during high inflation periods, using the average coefficient of variation as a measure. The dispersion metric is calculated as follows:

$$CV_t = \frac{1}{k}\sum_{i=1}^{k} CV_{i,t},\ CV_{i,t} = \frac{\sigma_{i,t}}{\mu_i},\ \sigma_{i,t} = \sqrt{\frac{1}{J_i}\sum_{j=1}^{J_i}(p_{j,i,t} - \mu_{i,t})^2}$$

Here, CV_t denotes the average coefficient of variation for k products at time t, $\sigma_{i,t}$ represents the standard deviation of prices for product i at time t across outlets j, and μ_i refers to the average price of product i over time.[14] Our findings reveal that price dispersion increased significantly during these periods (see Figure 5).

[14] The number of outlets J_i varies by product, with an average of 312.5 outlets surveyed per item.

[Figure 5] Changes in the Price Dispersion by Sales Outlet for Individual Products



Data: Korea Consumer Agency, Author's calculation

This increase in price dispersion indicates that the prices of identical goods varied substantially across sellers during high inflation periods. These results suggest that firms responded to inflationary pressures by adjusting regular prices more frequently and relying on temporary pricing strategies to accommodate shifting consumer demand and manage inventories. From a welfare perspective, such heightened dispersion also raises shoe-leather costs for consumers, as households must devote additional time and effort to search for favorable prices, thereby amplifying the real burden of inflation.

To quantitatively describe the association between price adjustment behavior and inflation, we conducted a fixed effect regression analysis following the methodology of Nakamura and Steinsson (2008), with the frequency and size of price increases and decreases of individual products as the dependent variable (y_{it}), and consumer price inflation (π_t) as the independent variable:

$$y_{it} = \alpha_i t + \gamma_i + \beta\pi_t + \varepsilon_{it} \tag{7}$$

Here, γ_i represents product-specific fixed effects controlling for unobserved time-invariant characteristics, while α_i captures individual product-specific time trends.

Table 5 reports the estimated coefficients. The results show a strong positive correlation between the inflation rate and the frequency of regular price increases: a 1 percentage point rise in inflation is associated with approximately a 1 percentage point increase in the frequency of regular price hikes. In contrast, no significant relationship was found with the frequency or size of regular price decreases, nor with the size of price increases. These findings are consistent with the existing literature based on foreign data which also report that firms tend to adjust the frequency of price hikes rather than their size. This suggests that firms respond to inflation primarily by changing how often they increase prices, rather than by altering the magnitude of individual price changes.

[Table 5] Regressions of Frequency and Size of Price Changes on Inflation

	Regular prices		Prices	
Frequency of Price Increase	1.036^{**}	(0.00)	2.284^{**}	(0.00)
Frequency of Price Decrease	-0.184	(0.17)	1.053^{**}	(0.00)
Size of Price Increase	0.641	(0.29)	0.839	(0.09)
Size of Price Decrease	-0.237	(0.52)	0.487^{*}	(0.01)

Data: Author's calculation

Notes: **,* indicates statistical significance at the 1%, 5% level respectively, ( ) denotes p-value.

When the analysis is extended to include prices with discounts, inflation shows a significant positive correlation not only with the frequency of both price increases and decreases, but also with the size of price decreases. This pattern highlights that during high-inflation periods, firms increasingly rely on temporary discounts, adjusting both their frequency and magnitude, rather than altering regular prices.

The analysis should be interpreted as descriptive rather than causal. The purpose of reporting these regressions is to provide quantitative benchmarks that allow comparability with existing studies such as Nakamura and Steinsson (2008) and Lee and Kang (2020).

V. Model with inflation dependent pricing

This section introduces a nonlinear Dynamic Stochastic General Equilibrium (DSGE) model designed to capture the observed variability in firms' price adjustment frequencies in response to inflation. Unlike standard New Keynesian DSGE models, which assume constant intervals between price changes, our framework incorporates inflation-responsive pricing behavior. While the standard New Keynesian approach provides a robust analytical foundation under conditions of moderate and stable inflation, it does not adequately reflect firms' behavior during episodes of volatile inflation caused by large exogenous shocks or persistent inflationary pressures.

To address this limitation, we modify the conventional Calvo pricing setup by introducing inflation-dependent adjustment probabilities, thereby reflecting observed pricing practices during high-inflation periods in Korea. Specifically, we develop a hybrid model that combines the tractability of Calvo pricing with a parsimonious state-dependent element. Although menu-cost frameworks (e.g., Golosov and Lucas Jr (2007); Nakamura and Steinsson (2010); Vavra (2014)) offer stronger micro-foundations for explaining changes in the frequency of price adjustments, their implementation within New Keynesian DSGE models is computationally demanding. As a more practical alternative, we redefine the Calvo parameter as a function of aggregate inflation, thereby allowing adjustment probabilities to vary systematically with macroeconomic conditions.

5.1 Model Overview and Key Equations

Due to the extensive nature of the model's derivation, we present only the key equations here, focusing on the features that differentiate our model from standard setups (refer to Galí(2015) for a detailed derivation).

The model comprises the following key variables: consumption (C_t), output (Y_t), potential output (Y_t^f), nominal interest rate (R_t), inflation (Π_t), relative reset price (Π_t^*), labor input (N_t), real wages (w_t), marginal cost (mc_t), price dispersion (υ_t^p), and price adjustment frequency (θ_t). Additionally, it incorporates shocks to demand (q_t), and costs (z_t) all of which follow AR(1) processes. The parameters β, σ, η, ϕ_π, ε, $\bar{\theta}$, and ξ are detailed in section 5.2.

1. Household Optimization:

$$C_t^{-\sigma} = \beta R_t E_t \left[\frac{C_{t+1}^{-\sigma}}{\Pi_{t+1}}\right] \exp(q_t) \tag{8}$$

$$N_t^{\eta} = w_t C_t^{-\sigma} \tag{9}$$

2. Marginal Cost:

$$mc_t = w_t \exp(z_t) \tag{10}$$

3. Production Function:

$$Y_t = \frac{N_t}{\upsilon_t^p} \tag{11}$$

4. Resource Constraint:

$$Y_t = C_t \tag{12}$$

5. Flexible Price Level of Output:

$$Y_t^f = \left(\frac{\varepsilon - 1}{\varepsilon}\right)^{\frac{1}{\gamma+\eta}} \tag{13}$$

6. Monetary Policy:

$$R_t = \bar{R} \left(\frac{\Pi_t}{\bar{\Pi}}\right)^{\phi_\pi} \tag{14}$$

7. Firm's Optimization and Inflation Process:

$$G_{1,t} = C_t^{-\sigma} mc_t Y_t + \beta\theta_t E_t\left[G_{1,t+1}\Pi_{t+1}^{\varepsilon}\right] \tag{15}$$

$$G_{2,t} = C_t^{-\sigma} Y_t + \beta\theta_t E_t\left[G_{2,t+1}\Pi_{t+1}^{\varepsilon-1}\right] \tag{16}$$

$$\Pi_t^* = \left(\frac{G_{1,t}}{G_{2,t}}\right)\left(\frac{\varepsilon-1}{\varepsilon}\right) \tag{17}$$

$$v_t^p = (1 - \theta_t)(\Pi_t^*)^{-\varepsilon} + \theta_t (\Pi_t)^{\varepsilon} v_{t-1}^p \tag{18}$$

$$1 = (1 - \theta_t)(\Pi_t^*)^{-\varepsilon} + \theta_t (\Pi_t)^{\varepsilon-1} \tag{19}$$

8. Firm's Pricing Pattern:

$$\theta_t = \min\left(\bar{\theta}, \bar{\theta}e^{-\xi\,(\Pi_t - 1)}\right) \tag{20}$$

9. Shocks:

$$q_t = \rho_q q_{t-1} + \varepsilon_t^q \tag{21}$$

$$z_t = \rho_z z_{t-1} + \varepsilon_t^z \tag{22}$$

where ρ_j and $\varepsilon_t^j \sim N(0, \sigma_t^j)$, $j \in \{q, z\}$, represent the persistence and dispersion of shocks.[15]

[15] The term q_t enters the Euler equation as a wedge between the policy rate set by the central bank and the return on household assets. A positive shock to q_t raises the required return on assets and reduces current consumption, thereby acting as a demand or financial shock; see Smets and Wouters (2007) and Coibion et al. (2012). In our framework, q_t is included to generate different initial inflation levels across scenarios (Figures 8–10) and to trace out the Phillips curve in the simulation exercises (Figure 11).

All other equations follow the standard textbook New Keynesian model, while Equation (20) represents the key departure from the conventional pricing block. In the canonical Calvo (1983) framework, firms are given the opportunity to reset their price each period with probability $1 - \theta$, while with probability θ they must keep their existing price. Crucially, this reset probability is exogenously given and identical across firms, implying that the timing of price changes is unrelated to firm-specific shocks or macroeconomic conditions. Firms therefore do not choose *when* to adjust, but only *how much* once a random opportunity arrives. Despite its limited realism relative to menu-cost models—where firms endogenously decide to adjust based on the trade-off between menu costs and expected profits—the Calvo specification remains widely used because of its analytical tractability and suitability for large-scale policy models.

In this paper, we preserve the micro-level Calvo environment, where individual firms perceive the arrival of price-reset opportunities as exogenous, but extend the framework by allowing the Calvo parameter θ to vary with aggregate inflation, i.e. $\theta_t = \theta(\Pi_t)$.[16] This formulation introduces a parsimonious form of macro-level state dependence in the frequency of price adjustment: during high-inflation episodes, the fraction of firms adjusting prices increases. At the same time, firms continue to regard the reset probability as exogenous to their own decisions, leaving the individual optimization problem isomorphic to the standard Calvo setup. In this way, the model provides a shortcut for embedding empirically observed variation in price-setting frequencies into a tractable NK framework, while avoiding the heavy computational costs of full menu-cost models. To reiterate, our model abstracts from idiosyncratic cost or demand shocks and incorporates no micro-level state dependence, which clearly sets it apart from menu-cost frameworks.

5.2 Parameterization

We set $\beta = 0.995$, which implies a steady-state real interest rate of 2 percent per annum. We assume $\sigma = 1$, corresponding to log utility, and $\eta = 1$, implying a unitary Frisch elasticity of labor supply. The elasticity of substitution across differentiated goods is set to $\varepsilon = 7$, which implies a steady-state markup of about 15 percent.

[16] The functional form in equation (20) imposes an upper bound of $\bar{\theta}$ on the frequency parameter and ensures that it remains strictly positive, converging toward zero only in the limit as inflation increases.

Standard New Keynesian models assume that firms adjust their prices approximately once every three to four quarters, and such behavior remains invariant regardless of the macroeconomic conditions. Specifically, the probability that a firm keeps its prices unchanged in a given quarter is assumed to be a constant parameter, θ, with values assigned between 0.66 and 0.75.

Drawing on Section 4, which shows that the frequency of price adjustments among domestic firms rose from 10.9% to 15.3% per month during the high-inflation period, we map these rates (p_m) into a quarterly Calvo parameter,

$$\theta_q = (1 - p_m)^3.$$

This implies $\theta_q \approx 0.71$ at 2% inflation ($p_m = 0.109$) and $\theta_q \approx 0.61$ at 4% inflation ($p_m = 0.153$), corresponding to an average price duration of roughly 10–11 months and 7–8 months, respectively.

To capture this pattern, the model specifies the probability of price stickiness as an inflation-dependent function bounded above at $\bar{\theta} = 0.71$. This reflects that below 2% inflation, adjustment frequencies remain stable. The slope parameter ξ is calibrated so that durations at 2% and 4% inflation match the observed ranges. Table 6 summarizes the benchmark parameterization: aside from $\bar{\theta}$ and ξ, we adopt standard values from the literature.[17]

[Table 6] Calibrated parameters

Parameter	Description	Value
β	Discount factor of Household	0.995
σ	Relative Risk Aversion	1
η	Inverse of Frisch Elasticity of Labor Supply	1
ε	Elasticity of Substitution between Intermediate Goods	7
$\bar{\theta}$	Upper bound of the probability of price maintain	0.71
ξ	Slope of the Price Adjustment Frequency Function	-20.24
ϕ_π	Weight on the Inflation Gap in the Monetary Policy Function	1.5
$\rho_{q,z}$	AR(1) Persistence Coefficient of Shocks	0.8

[17] Most baseline parameters follow Galí (2015), as our focus is on the implications of variable price adjustment frequencies. We confirm that these choices do not materially affect the results.

5.3 Numerical Methodology

For numerical solutions, we departed from the commonly used linearization methods to better capture the nonlinear dynamics of inflation far from equilibrium. Instead, we solved the model using the Simultaneous Transition and Policy Function Iterations method developed by Cao et al. (2023), which is particularly well-suited for approximating solutions to complex nonlinear models. Additionally, the AR(1) shock processes were discretized using the method proposed by Tauchen (1986).

The impulse response functions (IRFs) were derived as follows:

1. Compute the average response of the variable at $t = 1$ following a specific shock.
2. Calculate the average response at $t = 1$ in the absence of the shock.
3. Obtain the conditional IRF by subtracting the response in step 2 from step 1.
4. Average the conditional IRFs over the ergodic distribution to derive the unconditional IRF, which was used for analysis.

VI. Macroeconomic Implication

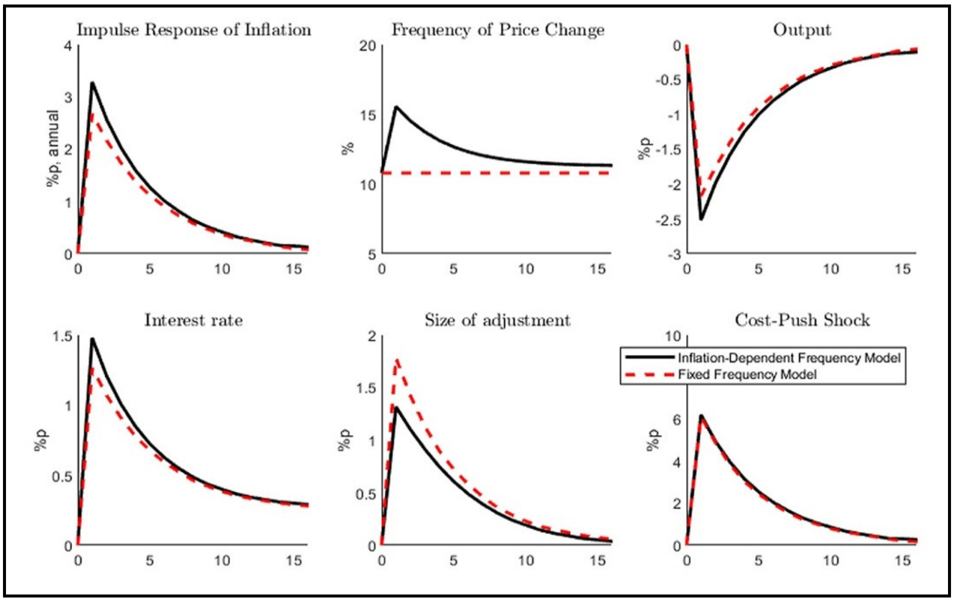
6.1 Model results

We compare two models of price adjustment. The first is an inflation-dependent frequency (IDF) model in which the frequency of firms' price changes varies with inflation; the second is a fixed-frequency (FF) model in which the frequency is held constant.[18]

Figure 6 reports impulse responses to a positive cost-push shock. As in standard New Keynesian settings, the shock raises inflation and reduces output. In the IDF model, the frequency of price changes increases endogenously with inflation. By calibration, when inflation is 3 percentage points above steady state (for example, from 2% to 5%), the frequency rises to about 16 percent, matching Fact 1 from the empirical section. The empirical analysis shows that the average size of price changes does not increase much when inflation rises. In the IDF model the size of adjustments does increase, yet it is roughly 30 percent smaller than in the FF model, which brings the model closer to the observed behavior of prices.

[18] In the FF model we fix $\theta_t = 0.71$.

[Figure 6] Impulse Response of Inflation and Frequency to Cost Shocks

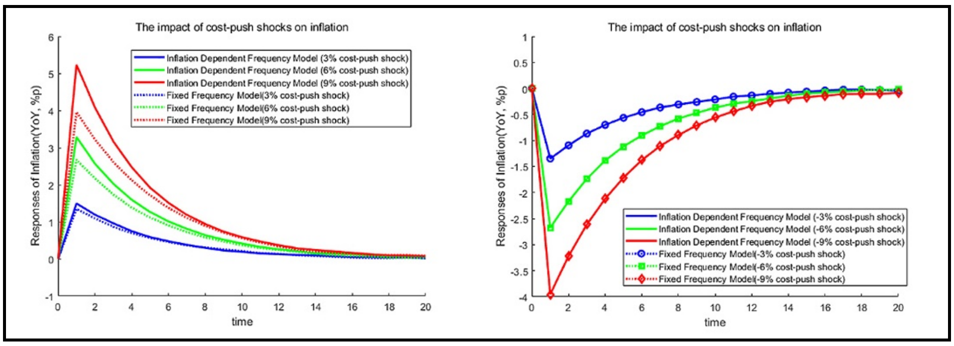


Data: Author's calculation.

Note: Response of the fixed frequency model and the Inflation-Dependent Frequency Model to the same level of shock.

Inflation peaks higher under IDF than under FF because more frequent adjustments pass cost increases through to prices more rapidly. Despite the greater price flexibility, output falls more in the IDF model, since the stronger inflation response triggers larger interest rate increases under a Taylor-type policy rule, which depresses demand more strongly.

[Figure 7] Response of Inflation to the Size of Cost Shocks



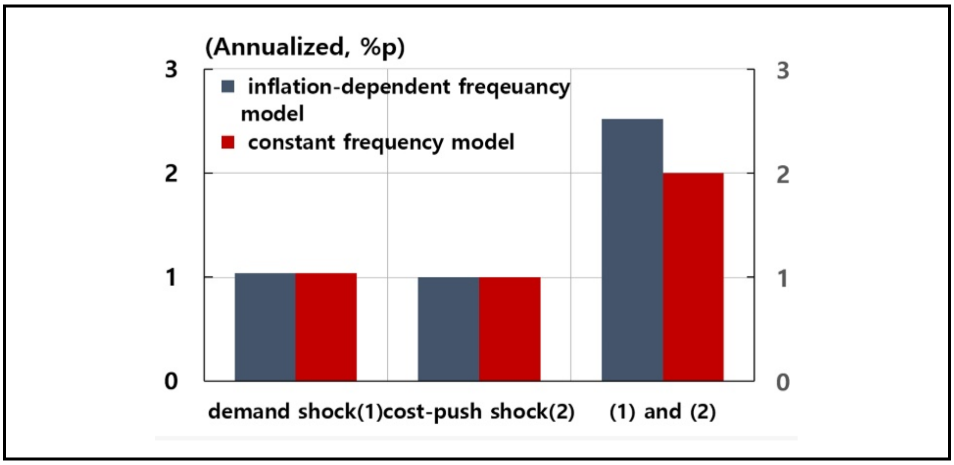
Data: Author's calculation.

Notes: 1) Inflation responses to 3%, 6%, and 9% cost shocks are shown.

2) Each color represents the response of the Fixed Frequency Model (dotted line) and the Inflation-Dependent Frequency Model (solid line) to the same level of shock.

Figure 7 illustrates how the models respond to different shock magnitudes. When shocks are small and the economy is close to its steady state (i.e., under normal conditions), the differences across models remain muted. As shock magnitude increases, the models begin to diverge. In the FF model, inflation responds in an approximately linear fashion: the effects of 6 percent and 9 percent cost shocks are exactly two and three times those of a 3 percent shock. In the IDF model, the relationship is non-linear: a 6 percent shock produces an inflation response about 2.2 times that of a 3 percent shock, and a 9 percent shock yields about 3.5 times. This non-linearity helps explain why large cost shocks, such as energy price surges, can generate disproportionately large inflation spikes. These effects are muted, however, when the shock is deflationary (a negative cost-push shock), since in the model the frequency of price adjustment does not decrease when inflation falls below its steady-state level (2%).

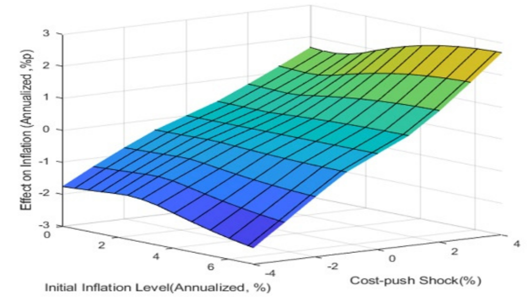
[Figure 8] Response of the Inflation to Separate and Simultaneous Demand and Cost Shocks



Data: Author's calculation.
Note: Demand and cost shocks causing 1 percentage point of inflation occur separately and simultaneously. The quarterly inflation response upon the shock is translated to an annual rate.

Figure 8 shows that when multiple shocks arrive together—such as elevated oil prices combined with post-pandemic pent-up demand—IDF delivers amplification beyond the sum of individual effects. This provides a more convincing account of the post-pandemic inflation surge, where unusually large supply disturbances (war, supply chain disruptions) coincided with strong demand.

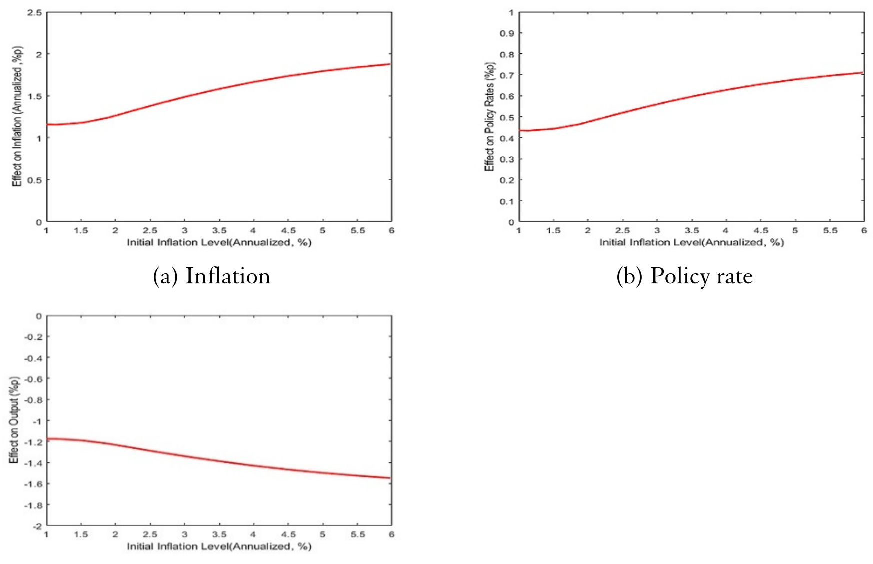
[Figure 9] Inflation Volatility Depending on the Level of Inflation



Data: Author's calculation.
Note: Figure presents responses at period 1.

Figure 9 analyzes how initial inflation conditions shape propagation. As initial inflation rises, the dispersion of inflation outcomes broadens, pass-through becomes faster, and inflation becomes more sensitive to shocks of the same magnitude, implying markedly higher volatility in high-inflation environments.[19]

[Figure 10] Response to a 3% Cost-Push Shock at Different Levels of Initial Inflation



(a) Inflation (b) Policy rate (c) Output

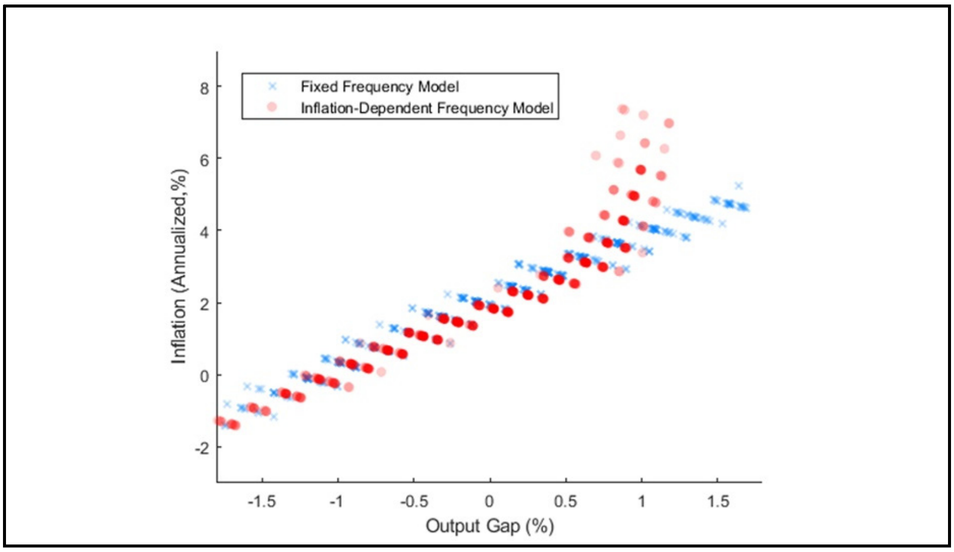
Data: Author's calculation.
Note: Figure presents responses at period 1.

[19] Following Jo and Zubairy (2025), initial conditions are generated via a demand shock; a cost-push shock is then applied to the model's policy functions.

Quantitatively, when initial inflation is around 4–5 percent, the same cost-push shock induces a higher adjustment frequency and doubles the inflation impact relative to a low- inflation baseline of about 2 percent . With a Taylor-type rule, central banks respond with larger interest rate moves; therefore, even under identical cost shocks, output losses are greater at higher initial inflation(Figure 10).

Figure 11 contrasts the Phillips curve across 500-period simulations with stochastic shocks. The FF model delivers an approximately constant slope across inflation regimes. In the IDF model, the curve becomes steeper (closer to vertical) over portions of the output-gap–inflation space. In high-inflation environments, more frequent price changes make prices more flexible, so shocks translate more into inflation and less into real activity. A policy implication follows: when the Phillips curve is steeper, the sacrifice ratio can be lower, in the sense that stabilizing inflation through aggregate-demand policies—such as monetary or fiscal tightening—requires smaller output losses than in low-inflation regimes.

[Figure 11] Philips Curve based on Fixed Frequency Model and the Inflation-Dependent Frequency Model



Data: Author's calculation.
Notes: Results from 500 period simulation of each model.

6.2 Discussion

These experiments indicate that policy analysis should be recalibrated when inflation is persistently high, when inflation-related shocks are large, or when multiple shocks arrive simultaneously. In such environments, reliance on a fixed-frequency (FF) benchmark risks muting inflationary pressures, underestimating the policy-rate path needed to stabilize inflation, and biasing forecasts and policy evaluation. Incorporating the empirically observed changes in Korean firms' price-adjustment behavior into an otherwise standard model—allowing the frequency of price changes to vary with inflation while holding other features fixed—produces markedly different results: more amplified and nonlinear inflation dynamics, stronger pass-through, steeper Phillips curves, and more aggressive interest-rate responses to inflationary shocks under a Taylor-type rule, which in turn lead to greater output losses relative to the fixed frequency benchmark. Even this minimal modification materially alters key outcomes, suggesting that models used for Korean inflation risk assessment and forecasting should incorporate state-dependent pricing. In particular, omitting this channel tends to understate near-term risks when large or concurrent cost shocks occur and to overstate the sacrifice ratio in high-inflation environments.

While menu-cost models can more naturally generate changes in price adjustment patterns—clarifying the micro-level selection mechanism and the roles of extensive versus intensive margins—this literature is already well developed. Our contribution is intentionally pragmatic: we retain the widely used New Keynesian framework for policy analysis and forecasting, but move it closer to observed behavior by allowing the frequency of price changes to respond to inflation in a reduced-form, macro-level manner. This "hazard shifter" preserves the tractability of the standard pricing block and can be embedded and estimated with the same tools routinely employed by policy institutions.

The purpose of the simulations in this section is to assess macroeconomic relevance: given the Korean micro evidence in Section 4, are the observed shifts in price-change frequency large enough to affect aggregate dynamics and policy prescriptions? The results indicate that they are. By making adjustment frequency rise with inflation, shocks trigger higher and nonlinear inflation peaks, stronger pass-through, and consequently larger output losses under a Taylor-type rule when the economy is in a high-inflation environment, leading to meaningfully different propagation. These mechanisms align closely with the inflation patterns observed during the recent high-inflation period. Taken together, the findings imply that, should another high-inflation episode occur, ignoring variation in adjustment frequency may lead to understated near-term risks and misjudged policy trade-offs.

VII. Conclusion

We analyze how firms' price-adjustment behaviors evolve during episodes of high inflation and assess the resulting implications for the macroeconomy and policy. Utilizing bi-weekly product price survey data, we documented pricing behaviors in Korea and observed significant changes during high inflation periods, including increased adjustment frequencies and greater price variance. We believe this provides valuable information for researchers studying macroeconomic dynamics in Korea.

Our research highlights the importance of integrating adaptive pricing behaviors into macroeconomic models. By incorporating inflation-dependent price-adjustment frequencies observed among Korean firms, we demonstrate that changes in pricing behavior reshape the transmission of economic shocks. These behavioral shifts amplify the responses of key macroeconomic variables, generating more pronounced and nonlinear inflation dynamics and producing outcomes that differ markedly from those implied by standard models, emphasizing the need for policy models to adapt to evolving economic conditions. As economies continue to face new challenges, our work underscores the critical role of microdata in informing policy decisions and advancing macroeconomic theory.

Future research should investigate pricing patterns in the service and durable goods sectors, which were beyond the scope of our study, and explore the broader implications of firms' pricing behaviors. Developing more sophisticated models to explain these dynamics will enhance our understanding of the complex relationship between individual firm actions and macroeconomic outcomes.

Appendix A

Appendix.A: Decomposition of Factors in Regular Price Variability

The rate of increase in the prices of good (π_t) in our sample can be decomposed as the average of the adjustment frequency and size of change as follows:

$$\pi_t = \frac{1}{k}\sum_{i=1}^{k}\left(f_{i,t}^{+}dp_{i,t}^{+} + f_{i,t}^{-}dp_{i,t}^{-}\right) \tag{23}$$

To determine the contribution of each factor, two counterfactual scenarios were analyzed, assuming that the frequency and magnitude of price increases and decreases were fixed at their average levels during the analysis period:

$$\pi_t^{s1} = \frac{1}{k}\sum_{i=1}^{k}\left(f_{i,t}^{+}d\bar{p}_{i,t}^{+} + f_{i,t}^{-}d\bar{p}_{i,t}^{-}\right) \tag{24}$$

$$\pi_t^{s2} = \frac{1}{k}\sum_{i=1}^{k}\left(\bar{f}_{i,t}^{+}dp_{i,t}^{+} + \bar{f}_{i,t}^{-}dp_{i,t}^{-}\right) \tag{25}$$

where k is the total number of products, and $\bar{f}_{i,t}^{+}$, $\bar{f}_{i,t}^{-}$, $d\bar{p}_{i,t}^{+}$, $d\bar{p}_{i,t}^{-}$ represent the average increase frequency, decrease frequency, increase rate, and, decrease rate during the analysis period, respectively.
where π_t^{s1} is an indicator that can identify the contribution of the adjustment frequency by fixing the adjustment magnitude, and π_t^{s2} is an indicator that can identify the contribution of changes in adjustment magnitude by fixing the adjustment frequency. The analysis results showed that changes in the price adjustment frequency explain the variation in the prices of necessities well (see Figure 4).

References

Alvarez, L. J., E. Dhyne, M. Hoeberichts, C. Kwapil, H. Le Bihan, P. Lu¨ nnemann, F. Martins, R. Sabbatini, H. Stahl, P. Vermeulen, et al. (2006). Sticky prices in the euro area: a summary of new micro-evidence. *Journal of the European Economic association 4*(2-3), 575–584.

Babb, N. R. and A. K. Detmeister (2017). Nonlinearities in the phillips curve for the united states: Evidence using metropolitan data. Finance and Economics Discussion Series 2017-070, Board of Governors of the Federal Reserve System (U.S.).

Benigno, P. and G. B. Eggertsson (2023). It's baaack: The surge in inflation in the 2020s and the return of the non-linear phillips curve. NBER Working Paper 31197, National Bureau of Economic Research.

Bils, M. and P. J. Klenow (2004). Some evidence on the importance of sticky prices. Journal of political economy 112(5), 947–985.

Boehm, C. E. and N. Pandalai-Nayar (2022). Convex supply curves. *American Economic Review 112*(12), 3941–3969.

Bunn, P., L. S. Anayi, N. Bloom, P. Mizen, G. Thwaites, and I. Yotzov (2022). Firming up price inflation. NBER Working Paper 30505, National Bureau of Economic Research.

Calvo, G. A. (1983). Staggered prices in a utility-maximizing framework. *Journal of monetary Economics 12*(3), 383–398.

Cao, D., B. Diba, and D. Lee (2023). Nonlinear phillips curve with asymmetric adjustment cost. Technical Report 4335930, SSRN.

Cao, D., W. Luo, and G. Nie (2023). Global dsge models. *Review of Economic Dynamics 51*, 199–225.

Coibion, O., Y. Gorodnichenko, and J. Wieland (2012). The optimal inflation rate in new keynesian models: should central banks raise their inflation targets in light of the zero lower bound? *Review of Economic Studies 79*(4), 1371–1406.

Davig, T. (2016). Phillips curve instability and optimal monetary policy. *Journal of Money, Credit and Banking 48*(1), 233–246.

Gagnon, J. and C. G. Collins (2019). Low inflation bends the phillips curve. *Peterson Institute for International Economics Working Paper* (19-6).

Galí, J. (2015). *Monetary policy, inflation, and the business cycle: an introduction to the new Keynesian framework and its applications*. Princeton University Press.

Gasteiger, E. and A. Grimaud (2023). *Price setting frequency and the phillips curve. European Economic Review 158*, 104535.

Gautier, E., C. Conflitti, R. P. Faber, B. Fabo, L. Fadejeva, V. Jouvanceau, J.-O. Menz, T. Messner, P. Petroulas, P. Roldan-Blanco, F. Rumler, and P. Seiler (2024). New facts on consumer price rigidity in the euro area. *American Economic Journal: Macroeco- nomics 16*(4), 386–431.

Golosov, M. and R. E. Lucas Jr (2007). Menu costs and phillips curves. *Journal of Political Economy 115*(2), 171–199.

Harding, M., J. Linde´, and M. Trabandt (2023). Understanding post-covid inflation dynamics. *Journal of Monetary Economics 140*, S101–S118.

Hooper, P., F. S. Mishkin, and A. Sufi (2020). Prospects for inflation in a high pressure economy: Is the phillips curve dead or is it just hibernating? *Research in Economics 74*(1), 26–62.

Jo, Y. J. and S. Zubairy (2025). State-dependent government spending multipliers: Downward nominal wage rigidity and sources of business cycle fluctuations. *American Economic Journal: Macroeconomics 17*(1), 379–413.

Karadi, P., J. Amann, J. S. Bachiller, P. Seiler, and J. Wursten (2023). Price setting on the two sides of the atlantic-evidence from supermarket scanner data. *Journal of Monetary Economics 140*, S1–S17.

Klenow, P. J. and B. A. Malin (2010). Microeconomic evidence on price-setting. In *Handbook of monetary economics*, Volume 3, pp. 231–284. Elsevier.

Lee, D. and S. Lim (2024). Characteristics and implications of changes in domestic firms' price adjustment behaviors after the pandemic (in korean). BOK Issue Note 2024-7, Bank of Korea.

Lee, J. and J. Kang (2020). Analysis of firms' price adjustment behavior under low inflation (in korean). *Bank of Korea Monthly Bulletin 74*(6).

Montag, H. and D. Villar Vallenas (2023). Price-setting during the covid era. Technical report, Board of Governors of the Federal Reserve System (US).

Nakamura, E. and J. Steinsson (2008). Five facts about prices: A reevaluation of menu cost models. *The Quarterly Journal of Economics 123*(4), 1415–1464.

Nakamura, E. and J. Steinsson (2010). Monetary non-neutrality in a multisector menu cost model. *The Quarterly journal of economics 125*(3), 961–1013.

Rotemberg, J. J. (1982). Sticky prices in the united states. *Journal of political economy 90*(6), 1187–1211.

Rudolf, B. and P. Seiler (2022). Price setting before and during the pandemic: Evidence from swiss consumer prices. Working Paper Series 2748, European Central Bank.

Smets, F. and R. Wouters (2007). Shocks and frictions in us business cycles: A bayesian dsge approach. *American economic review 97*(3), 586–606.

Tauchen, G. (1986). Finite state markov-chain approximations to univariate and vector autoregressions. *Economics letters 20*(2), 177–181.

Vavra, J. (2014). Inflation dynamics and time-varying volatility: New evidence and an ss interpretation. *The Quarterly Journal of Economics 129*(1), 215–258.

한국의 고인플레이션 국면에서 나타난 가격변화의 네 가지 특징과 시사점*

이 동 재** · 임 서 하***

초 록 본 연구는 팬데믹 이후 고인플레이션 시기 한국 기업의 가격조정 전략 변화를 개별 상품단위 미시자료를 활용하여 분석하였다. 분석 결과, (1) 가격조정 빈도의 급증, (2) 개별 가격변화 폭의 안정성, (3) 일시적 할인 활용의 확대, (4) 판매점 간 가격 분산 증가의 네 가지 특징이 확인되었다. 이는 고인플레이션 국면에서 가격설정의 주요 조정 경로가 조정 빈도임을 시사한다. 이러한 행태의 거시경제적 함의를 평가하기 위해 인플레이션 수준에 따라 시변하는 가격조정 빈도를 DSGE 모형에 반영한 결과, 일반적인 모형 대비 인플레이션 변동성이 확대되고 통화정책이 직면하는 상충관계 역시 변화하는 것으로 나타났다. 이는 인플레이션 동학의 정확한 파악과 정책 분석을 위해 실증 기반의 가격설정행태를 모형화 과정에 통합할 필요성을 보여준다.

핵심 주제어: 가격설정행태, 인플레이션 동학, 가격 경직성, 상태의존적 가격설정, 비선형 DSGE 모형, 필립스 곡선

경제학문헌목록 주제분류: E30, E31, E37, E50, E52

투고 일자: 2024. 12. 26. 심사 및 수정 일자: 2025. 10. 28. 게재 확정 일자: 2025. 11. 26.

* 본 논문은 저자들이 이전에 작성한 한국은행 이슈노트 2024-7을 수정, 보완한 연구임을 밝힙니다. 본 논문의 결과는 한국은행의 공식견해가 아닌 집필자 개인의 견해이며, 남아있는 모든 오류는 저자들의 책임임을 밝힙니다. 본 연구를 진행하는 과정에서 귀중한 조언과 격려를 보내주신 한국은행 박창현 박사와 이정익 박사님께 깊이 감사드립니다. 또한, 한국은행 금융통화위원회 장용성 위원님과, 서울대학교 박웅용 교수님께서 제공해주신 심도 있는 의견에 감사드립니다. 아울러, 공동편집인 이윤수 교수님과 익명의 심사위원들께서 주신 건설적인 의견에도 감사드립니다.

** 제1저자 및 교신저자, 한국은행 인천본부 과장, e-mail: dongjae.lee@bok.or.kr

*** 공동저자, 한국은행 인사운영팀 조사역, e-mail: lim.seoha@bok.or.kr