Price Setting Before and During the Pandemic: Evidence from Swiss Consumer Prices*

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September 2026

Abstract

Using microdata underlying the Swiss consumer price index from 2008 to 2025, we document new features of price rigidity and assess their implications for inflation dynamics. The frequency of price changes increased in the decade before the pandemic, driven by items shifting to online price collection, as confirmed by causal identification from an event-study around a collection-mode switch. During the pandemic, the aggregate frequency response was muted, masking large cross-sectional heterogeneity: demand contractions and stricter government interventions each reduced the frequency of adjustments, while demand contractions amplified their size. In response to aggregate shocks, firms adjust mainly the size rather than the frequency of price changes, consistent with time-dependent pricing. However, nonlinear local projections reveal that when price flexibility is high or price selection is strong, firms respond along both margins, monetary non-neutrality falls, and the appropriate macro model switches from time-dependent to state-dependent.

JEL classification: E31, E5, L11

Keywords: Price rigidity, price-setting behavior, consumer prices, inflation, state dependence, COVID-19 pandemic

*For helpful comments and suggestions, we thank the Editor, two anonymous referees, Rachel Arulraj-Cordonier, Luca Dedola, Erwan Gautier, Petra Gerlach, Hans Gersbach, Peter Karadi, Sarah Lein, Carlos Lenz, Jan-Egbert Sturm, Peter Zorn, and Mathias Zurlinden, as well as the seminar participants at the EEA-ESEM 2022, ETH Zurich, the European Central Bank, the SEA conference 2021, the Spring Meeting of Young Economists 2022, the Annual Congress 2022 of the SSES, the Swiss National Bank, and the University of Basel. We would also like to thank Corinne Becker and Hans-Markus Herren of the Swiss Federal Statistical Office for their valuable help with the data. The views, opinions, findings, and conclusions or recommendations expressed in this paper are strictly those of the authors. They do not necessarily reflect the views of the Swiss National Bank (SNB). The SNB takes no responsibility for any errors or omissions in, or for the correctness of, the information contained in this paper.

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1 INTRODUCTION

Price rigidity is a cornerstone of modern macroeconomic models because sluggish price adjustment is central to monetary non-neutrality. A monetary stimulus affects real activity and transmits only gradually into inflation when prices do not respond immediately to shocks. Understanding how often and by how much firms adjust prices—and how these margins respond to different types of aggregate shocks—is therefore essential for assessing the transmission mechanism and designing policies that support price stability.

This paper uses the microdata underlying the Swiss consumer price index (CPI) from January 2008 to December 2025 to address these questions. The dataset comprises 10.6 million monthly price quotes for nearly 1,400 varieties from more than 4,000 outlets. After excluding administered prices and unit-value indices, the sample covers roughly 55 percent of CPI expenditures. The eighteen-year sample period is unusually informative for our purposes: it spans a decade of low inflation and rising e-commerce before the pandemic, the pandemic shock itself and its aftermath, the sharpest inflation episode in Switzerland in three decades, and its subsequent normalization. This sequence of distinct macroeconomic regimes—each associated with a different state of the price-change distribution—allows us to document how price-setting behavior changes across environments and to test which class of pricing models best describes firms' adjustment behavior across those environments.

At the aggregate level, Swiss consumer prices display considerable rigidity. In our baseline specification, which includes price changes due to temporary sales and product substitutions, the mean monthly frequency of price changes is 26.0 percent, with price increases (13.8 percent) slightly more common than price decreases (12.2 percent). The average absolute size of price changes is 10.7 percent. Price changes associated with temporary sales occur with a monthly frequency of just over two percent and involve large discounts on average. Price-setting behavior varies markedly across sectors: energy and unprocessed food adjust most frequently, whereas services adjust least frequently, reflecting the dominant role of labor costs in service production and global commodity prices in energy pricing. In international comparison, Swiss consumer prices are more flexible than the euro-area average (Gautier et al., 2024) but broadly comparable to those in the United States when sales-related price changes are excluded (Nakamura and

Steinsson, 2008).

The time-series evolution of price-setting behavior is marked by two distinct episodes. Before the pandemic (2008–2019), the frequency of price changes rose steadily from 21.2 to 28.9 percent, but this was not a broad-based shift: offline items changed little, while items increasingly collected online exhibited a dramatic rise in adjustment frequency. To establish causality, we exploit a quasi-experimental discontinuity in the Swiss CPI: from January 2016, all consumer electronics prices—previously collected in stores—were switched to exclusive online collection. An event-study design with variety and time fixed effects shows no differential pre-trends between treated and control items, but a sharp and persistent jump of 20–25 percentage points in the frequency of price changes at the switch date, with little change in the size of adjustments. This is the first causal evidence from an official CPI that the transition to online price collection—and, by extension, online competition and price transparency—directly reshapes measured aggregate price flexibility. The parallel with Cavallo (2018a), who documents rising adjustment frequencies among US multi-channel retailers using demand-side web-scraped data, is not coincidental: both studies observe the same structural change in retail markets—the rise of e-commerce, dynamic pricing, and reduced menu costs—from complementary angles. Our event-study adds a clean causal identification of the pricing-mode effect.

During the pandemic, the frequency of price changes fell sharply in 2020 despite large shocks, then rose again in 2021–22 in a broad-based manner. The absolute size of price changes declined at onset and remained compressed for an extended period. Temporary sales responded countercyclically, rising sharply in non-energy industrial goods (NEIG) and falling in food, consistent with opposing demand shocks across sectors. The aggregate frequency response was surprisingly muted, but this masks large and opposing cross-sectional movements: contact-intensive services and discretionary goods sharply reduced their adjustment frequencies, while food and selected NEIG categories adjusted more often. We go beyond description and identify the mechanisms. We construct a continuous, data-driven measure of pandemic exposure at the item level by matching COICOP categories to sector-specific debit card spending, and combine it with the KOF Stringency Index, a time-varying measure of the severity of government interventions. Panel regressions linking item-level price-setting moments to these two measures show that demand contractions and containment restrictions each

independently reduce the frequency of price adjustments, with the largest effects when weak demand and tight restrictions coincide. Items facing demand contractions also exhibit larger individual price changes despite adjusting less often—a pattern consistent with firms delaying repricing until the accumulated gap becomes too large to ignore, at which point the required adjustment is correspondingly large. These findings go substantially beyond the existing pandemic pricing literature: unlike Henkel et al. (2023), who analyze a limited number of narratively selected product categories over a three-month window, our approach covers the full CPI basket over the entire pandemic period, identifies affected sectors data-driven and continuously, and provides formal estimates of the joint and interactive effects of demand and policy shocks on both margins of price adjustment. In addition, we document how temporary sales responded countercyclically to pandemic-induced demand shifts, providing new evidence on the role of sales as an active adjustment margin (e.g., Klenow and Willis, 2007; Kryvtsov and Vincent, 2021).

Finally, we assess macroeconomic implications. We first decompose item-level inflation into contributions from the frequency and size of price changes. Variations in the size account for most of the variation in inflation—the correlation between inflation and the size-related counterfactual reaches 0.83, against only 0.20 for the frequency-related counterfactual. This lends support to time-dependent pricing as a description of average behavior. However, when price increases and decreases are considered separately, the frequencies of increases and decreases each contribute substantially to inflation variation, reflecting their large and opposing movements over the sample. This asymmetry points to something time-dependent models cannot generate: the extensive margin matters, but through the composition of the price-change distribution rather than its total size.

We then examine how both margins respond to aggregate shocks, using panel local projections with four distinct shock types that span the main transmission channels in a small open economy: oil supply news shocks (Känzig, 2021), Swiss franc safe haven shocks (Boneva, 2024), supply chain shocks (Känzig and Raghavan, 2026), and monetary policy shocks (Nitschka and Oktay, 2023). In the linear framework, inflation responds to all four shocks primarily through the size of price changes; the frequency channel is economically and statistically negligible on average, consistent with time-dependent pricing (Calvo, 1983). This result is in line with evidence from US CPI microdata (Klenow and Kryvtsov, 2008) and

the euro area (Gautier et al., 2024), and its cross-country robustness reflects a structural property: in low-to-moderate inflation environments, the distribution of price gaps is far from adjustment thresholds for most firms, so a common shock triggers repricing mainly for firms already near their threshold—the "selection effect" of Golosov and Lucas (2007)—and the aggregate response is dominated by the intensive margin.

The average result, however, disguises a fundamental regime switch. We extend the framework to nonlinear local projections that condition the inflation response on the current state of the price-change distribution, measured by the item-level sufficient statistic of Alvarez et al. (2016)—the ratio of the kurtosis to the frequency of price changes, computed at monthly frequency for each item. When the sufficient statistic is high, the inflation response to all shocks is muted and insignificant. When it is low—reflecting periods of elevated price flexibility or strong price selection, or both—price responses are significantly larger, faster, and involve both the extensive and intensive margins simultaneously. This state-dependent behavior aligns with the predictions of state-dependent pricing models and with recent empirical evidence that large shocks raise the frequency of price changes (Cavallo et al., 2024).

The practical implication of the joint evidence is not that one model is right and the other wrong, but that each is right in its own regime. Time-dependent models calibrated to average moments provide a valid benchmark for normal-times analysis. But the sufficient statistic is time-varying and measurable in real time from CPI microdata. When it deviates materially from its long-run average—as it did during the post-pandemic inflation episode and following the structural shift to online pricing—a state-dependent framework with an endogenous adjustment hazard (Blanco et al., 2024; Karadi et al., 2025) is required to accurately characterize shock transmission. The sufficient statistic thus serves as an empirical model-selection criterion: it tells a policymaker or modeler which pricing regime the economy is currently in, without requiring them to take a stand on structural parameters.

The paper is related to a large literature on price-setting behavior based on CPI microdata.[1] Bils and Klenow (2004), Klenow and Kryvtsov (2008), and Nakamura and Steinsson (2008) characterize price rigidity in the United States. Dhyne et al. (2006) and Gautier et al. (2024) document price-setting behavior across the euro area. Evidence for Switzerland is more limited: Kaufmann (2009) examines quar-

terly CPI data from 1993–2005, and Föllmi et al. (2016) study a small subset of non-tradable services.

Our contribution to this literature is threefold. First, we provide causal evidence that the rise of online price collection within the official CPI has materially increased aggregate price flexibility, using a quasi-experimental design that identifies the pricing-mode effect cleanly from concurrent structural changes. Prior work on this channel relies on web-scraped data and correlational designs (Cavallo, 2018a; Gorodnichenko and Talavera, 2017; Gorodnichenko et al., 2018); our event-study complements them with a supply-side identification.

Second, we provide the first systematic and data-driven assessment of pandemic price-setting across the full CPI basket, using continuously measured sector-specific demand shocks and a formal panel regression design. A growing literature examines pandemic-era pricing using CPI microdata (Montag and Villar, 2022), surveys (Balleer et al., 2024), scanner data (Karadi et al., 2023), or online prices (Alvarez and Lein, 2020; Cavallo and Kryvtsov, 2023; Henkel et al., 2023). We go beyond this work by covering the full CPI basket over the entire pandemic period and its aftermath through 2025, identifying affected sectors data-driven and continuously via debit card spending by merchant category rather than narratively, and providing formal estimates of the joint and interactive effects of demand contractions and government interventions on both margins of price adjustment. We show that the extensive and intensive margins responded asymmetrically: demand contractions reduced the frequency of adjustments while amplifying their size, consistent with firms delaying repricing until the accumulated gap becomes too large to ignore. The pandemic thus compressed the extensive margin while amplifying the intensive margin in the most affected sectors—a pattern that directly foreshadows the state-dependent dynamics documented in the local projections.

Third, and most broadly, we show that the empirical question of which pricing model describes the data does not have a single answer: the answer depends on the current state of the price-change distribution, and the sufficient statistic is the key observable that maps between the two regimes. This contributes to work on the micro foundations of inflation dynamics (Gagnon, 2009; Nakamura et al., 2018; Alvarez et al., 2019) and the role of price-setting margins in shock transmission (Balleer and Zorn, 2019; Dedola et al., 2021; Gautier et al., 2024), and provides a bridge between the theoretical literature on menu-cost models (Golosov and Lucas, 2007; Woodford, 2009) and the applied literature on time-

varying monetary non-neutrality (Alvarez et al., 2016; Blanco et al., 2024; Karadi et al., 2025).

The remainder of this paper is organized as follows. Section 2 describes the microdata underlying the Swiss CPI. Section 3 documents price-setting behavior from aggregate, cross-sectional, and time-series perspectives, covering both the pre-pandemic period and the COVID-19 pandemic. Section 4 analyzes the macroeconomic implications of price-adjustment margins for inflation dynamics and the transmission of aggregate shocks. Section 5 concludes.

2 DATA

This paper is based on monthly price quotes collected by the Swiss Federal Statistical Office (FSO) to construct the CPI for Switzerland.[2] Our sample spans from January 2008 to December 2025, comprises 296 expenditure items and nearly 1,400 varieties, and covers 55% of a representative basket of goods and services. Prices are observed at the store level and include detailed attributes such as product category, packaging size, and collection mode. Data sources combine traditional in-store collection, scanner data from major retailers, and an increasing share of online price collection in response to the rise of e-commerce. A detailed description of the underlying microdata, the construction of the longitudinal price panel, variable definitions, and data-processing procedures is provided in Rudolf and Seiler (2026).

2.1 *Price quotes*

A price quote $P_{p,s,t}$ denotes the transaction price of product p sold in store s in month t. For each price quote, the FSO records attributes such as product category, store, collection date, packaging size[3], and other characteristics. These data allow us to link prices for the same product and store across time, forming consistent price series.

Prices are collected for narrowly defined product categories ("varieties") at the lowest level of the basket of goods and services, based on the Classification of Individual Consumption by Purpose (COICOP). "Expenditure items" correspond to the five-digit COICOP level and represent the level at which the FSO publishes price indices and expenditure weights. These weights reflect the relative

importance of the basket components and are derived from the Household Budget Survey, updated annually. To compute aggregate statistics, we distribute the expenditure-item weight equally across all price quotes within the item.[4]

2.2 *Price collection*

Since 2008, the FSO has collected the majority of prices on a monthly basis (see Figure A.1 in Online Appendix A.1). Traditionally, most prices were collected directly in stores. Over time, the share of in-store observations declined, with less than half of price quotes recorded this way in 2025 (see Figure A.2 in Online Appendix A.1). Much of this decline is attributable to the increasing use of scanner data and web-scraped data. Since 2008, the FSO has incorporated scanner data from major retailers, improving data quality and administrative efficiency. As shown in Figure A.3 in Online Appendix A.1, most scanner-based prices pertain to food and near-food products (including personal care, washing and cleaning products, and animal food).

Additionally, the FSO expanded online price collection in response to the rise of e-commerce. Between 2010 and 2019, online and mail-order sales in Switzerland more than doubled from CHF 5.1 billion in 2010 to CHF 10.3 billion in 2019, while retail sales in brick-and-mortar stores declined from CHF 91.1 billion to CHF 81.3 billion over the same period.[5] Growth was particularly pronounced in consumer electronics, where the online share rose from about 15 percent in 2010 to 36 percent in 2019. Reflecting these shifts, the FSO progressively increased the share of prices collected from internet sources: by 2025, over 20 percent of all price quotes originated online.

In the CPI microdata, online prices are not flagged at the level of individual price quotes or stores. However, some online prices can be identified at the item level. For example, from January 2016 onward, all prices for consumer electronics[6], package holidays, and air transport have been collected exclusively online (FSO, 2016, 2022). We classify items as "fully online" when all price quotes for that item are obtained exclusively from internet sources (i.e., price collection has completely switched to online). Similarly, we classify items as "partially online" when online price collection complements continued in-store collection (e.g., clothing, footwear, furniture, and furnishings).[7] All remaining items are considered "offline," with prices collected exclusively in physical stores. Fully online items

account for 4.4 percent of CPI expenditure weights, and partially online items for 5.3 percent, on average.

2.3 *Temporary sales*

Prices fluctuate frequently due to temporary sales, i.e., short-term price discounts typically driven by seasonal patterns rather than broader macroeconomic conditions. Because these high-frequency movements can obscure underlying price-setting behavior, we distinguish between "posted prices" (including sales) and "regular prices" (excluding sales). When constructing regular prices, we replace each sales price—as flagged by FSO price collectors—with the most recent non-sales price. The FSO flags sales prices when discounts are temporary and available to all consumers without restriction.

These flags may be subject to measurement error—either because discounts are not visibly marked as special offers, or because price reductions that are permanent are nevertheless flagged as sales. To address this concern, we apply two alternative sales-filtering techniques as robustness checks: the symmetric V-shaped filter by Nakamura and Steinsson (2008) and the running mode filter by Kehoe and Midrigan (2015). The V-shaped filter classifies a price change as temporary if the price reverts to its prior level within a defined window. The running mode filter removes temporary price changes by creating regular prices based on the modal price in a running window.

2.4 *Product substitutions*

An important principle of price collection is to track prices of the same items over time to capture the evolution of prices only. However, consumer markets evolve rapidly—products frequently change, enter, or disappear—requiring rules for product replacements and quality adjustments (see FSO, 2016). The FSO applies three main substitution methods: (i) direct substitution for nearly identical products (e.g., a vintage of a wine replacing another vintage of the same wine), (ii) the chain method for functional equivalents (e.g., a brand on the rise replacing another), and (iii) non-replacement when no suitable substitute exists. On average, direct substitution accounts for 1.8 percent of price observations per month, non-replacement for 1.5 percent, and the chain method for 0.3 percent (see Figure A.4 in Online Appendix A.2).

Our analysis considers price changes with and without product substitutions. Our baseline approach follows Klenow and Kryvtsov (2008), treating a price series as continuous despite substitution and thus taking potential quality adjustment into account. Alternatively, we examine price changes under the assumption that a new price series begins with every product substitution, effectively excluding all price changes linked to product replacements.

2.5 *Price imputations*

Whenever a price is missing or cannot be observed, the FSO makes use of price imputations to maintain CPI calculation. To ensure that imputations do not affect our analysis, we exclude them whenever possible. Some imputed prices, however, cannot be identified in our data. This primarily concerns prices for temporarily unavailable products. In these cases, the FSO carries forward the last observed price, typically for up to two months before requiring a substitution. Since the FSO does not flag imputations at the level of individual price quotes, these imputed prices cannot be removed from our sample.

Two types of imputations can be identified and excluded. First, the prices of seasonal products are only recorded during the months in which the products are offered. Prices carried forward in the off-seasons account for 15.4 percent of price observations (14.8 percent of CPI expenditures). Second, during the COVID-19 pandemic (March 2020 to May 2021), limited field price collection led to imputations in the form of carry-overs of the last price observation or the insertion of trend information. The FSO listed the affected expenditure items in the monthly CPI press releases (see Table A.2 in Online Appendix A.2). While some prices within these items may have been observed as usual, we adopt a conservative approach and classify all price quotes for flagged items as "COVID imputations" during the affected months. Figure A.4 in Online Appendix A.2 illustrates the extent of price imputations during the pandemic.

2.6 *Data treatment and sampling decisions*

Our sample covers the period from January 2008 to December 2025. The start of the sample period is determined by a significant change in the price collection frequency (see Figure A.1 in Online Appendix A.1): prices of most goods and services were collected quarterly until December 2007 and monthly from January

2008 onward, enabling consistent analysis of monthly price changes over the full 2008–2025 period.

We exclude three types of observations a priori. First, we exclude imputed prices (including prices of seasonal products recorded during the off-season and price imputations during the COVID-19 pandemic from March 2020 to May 2021). Second, we exclude items for which the FSO constructs auxiliary indices to track price movements rather than actual price quotes. Examples include rental prices or books.[8] In total, there are 20 index-based items, which account for 36.3 percent of the CPI in 2025. Third, we exclude items of administered and semi-administered prices because they are set by government authorities and centrally collected. Examples are electricity, public transport services, and medicines.[9] In total, there are 39 items of administered and semi-administered prices, which account for 25.6 percent of the CPI in 2025.

Beyond these exclusions, we further address potential measurement errors.[10] First, we correct quantities when reported quantity changes exceed a factor of 10 (or fall below 1/10) and apply a carry-forward procedure to adjust unit prices affected by shifts in measurement units—affecting only 204 observations. Second, we trim extreme price changes beyond the 1st and 99th percentiles of absolute log price changes for each variety, removing fewer than 2 percent of all price changes.[11]

Table 1 summarizes the effects of our sampling decisions. The baseline data sample contains 10.6 million price quotes forming almost 200,000 price series, spanning 296 expenditure items and nearly 1,400 varieties. The sample covers 55.4 percent of the CPI basket on average. The largest excluded expenditure items are rents and homeowners' imputed rents, health services, and transportation services, whose average CPI weights are 23 percent, 14 percent, and 3 percent, respectively. The share of sales amounts to 5.2 percent of all observations—higher than the 3.8 percent observed in the euro area (Gautier et al., 2024) but lower than the 7.4 percent (Nakamura and Steinsson, 2008) and 11 percent (Klenow and Kryvtsov, 2008), respectively, in the United States. The share of product substitutions amounts to 3.4 percent of all observations, similar to the 3.0 percent (Klenow and Kryvtsov, 2008) and 3.4 percent (Bils and Klenow, 2004) reported for the United States.[12]

3 MICRO EVIDENCE ON PRICE-SETTING BEHAVIOR

This section documents price-setting behavior in Switzerland from January 2008 to December 2025. We characterize price setting along two central dimensions—the frequency and size of price changes—and examine their empirical properties from an aggregate (Section 3.1), cross-sectional (Section 3.2), and time-series perspective (Section 3.3).

Our analysis relies on price adjustments measured at the variety level. The frequency of price changes is defined as the share of prices that change relative to the previous month. The size of price changes is measured as the mean of non-zero log price changes. Aggregate moments are computed as weighted averages across varieties using CPI expenditure weights. Further details on the construction, weighting, and aggregation of these price-setting moments are provided in Online Appendix B.1.

3.1 *Aggregate perspective on price setting*

Table 2 summarizes average price-setting moments over the full sample period. In our baseline specification, which includes price changes due to temporary sales and product substitutions, the mean monthly frequency of price changes is 26.0 percent, implying that more than one in four prices change every month. Price increases (13.8 percent) are more frequent than price decreases (12.2 percent), and increases account for 55.9 percent of all price changes. Price changes associated with temporary sales occur with a monthly frequency of just over two percent. At 16.2 percent, the median frequency of price changes is substantially lower than the mean, indicating a right-skewed distribution of adjustment frequencies across varieties.[13]

The average absolute size of price changes is 10.7 percent, with price increases averaging 10.1 percent and price decreases 11.1 percent. Sales-related price changes are substantially larger, averaging 26.4 percent. At 7.6 percent in absolute terms, median price changes are considerably smaller than mean price changes, reflecting a large mass of relatively small adjustments.[14] The distribution of non-zero price changes exhibits excess kurtosis, consistent with findings for CPI microdata in other countries (e.g., Nakamura and Steinsson, 2008; Vavra, 2014). The kurtosis of the standardized price changes is 4.0 (3.9 if temporary sales are excluded). The

distribution is sharply peaked around zero (see Table B.1 in Online Appendix B.2): ten percent of all absolute price changes are smaller than 0.4 percent, and 25 percent are smaller than 1.1 percent. Numbers are similar when temporary sales are excluded (Table B.2 in Online Appendix B.2).

Temporary sales and product substitutions materially affect aggregate price-setting moments. Excluding price changes due to temporary sales reduces the frequency of price changes by about 2 percentage points and lowers the average absolute size of price changes by roughly 3 percentage points.[15] As shown in Online Appendix B.3, the estimated effects on frequency and size are robust to alternative sales-filtering methods.[16] Similarly, excluding price changes due to product substitutions reduces the frequency of price changes by about 2 percentage points, primarily by lowering the incidence of price increases.[17] While price increases are, on average, half a percentage point smaller (9.4 percent versus 10.1 percent), the size of price decreases remains virtually unchanged (-10.9 percent versus -11.1 percent). This asymmetry is consistent with the view that firms use product replacements as an opportunity to impose higher prices. Taken together, these results underscore the importance of sample composition and data treatment choices when interpreting aggregate measures of price rigidity. Whether temporary sales and product substitutions are included has first-order consequences for the estimated frequency and size of price changes.

Finally, we compare our aggregate findings for Switzerland with evidence for the United States (based on Nakamura and Steinsson, 2008) and the euro area (based on Gautier et al., 2024). Details on the comparison method and additional results are provided in Online Appendix B.4 and Online Appendix B.5. In international comparison, Swiss consumer prices appear more flexible than the euro-area average but broadly comparable to those in the United States when sales-related price changes are excluded. At the same time, the average size of price changes in Switzerland is smaller than in the US and slightly larger than in the euro area. While differences in consumption baskets and data collection practices imply that such comparisons must be interpreted with caution, they position Swiss price-setting behavior well within the range observed for advanced economies.

3.2 *Cross-sectional perspective on price setting*

Table 3 summarizes average[18] price-setting moments using the sample including price changes due to temporary sales and product substitutions.[19] Results are reported by sectors, by two-digit COICOP main groups[20], and by mode of price collection (online versus offline).[21]

Price-setting behavior varies significantly across sectors and product categories. Energy prices adjust most frequently, with a monthly frequency of 77.5 percent, while services adjust least, at 15.3 percent. These patterns reflect differences in input cost volatility: energy prices respond to global commodity and exchange-rate fluctuations, whereas services are tied to labor costs that adjust infrequently. Food and non-energy industrial goods (NEIG) lie in between, with monthly frequencies of 30.5 percent and 18.5 percent, respectively. Within food, unprocessed items change nearly twice as often as processed ones (45.7 versus 25.3 percent), consistent with exposure to global agricultural markets. Within NEIG, durable goods adjust more frequently than non-durables (20.6 versus 13.6 percent).

The COICOP main groups provide further insight into these patterns. Market-exposed services—transport, recreation, and restaurants—adjust relatively frequently (47.1, 28.3, and 10.6 percent, respectively), reflecting cost pass-through and demand fluctuations. By contrast, regulated or institutionally rigid service categories, such as healthcare, communication, and education, change prices far less often (5.8, 8.2, and 10.4 percent). Within NEIG, clothing and footwear stands out with the highest frequency of price changes (23.5 percent), driven by the prevalence of temporary sales and seasonal pricing. In contrast, household goods and communication equipment exhibit lower adjustment frequencies (around 14 percent).

These differences in the frequency of price changes are inversely reflected in the size of price changes: sectors with more frequent adjustments tend to exhibit smaller average price changes. Energy has the smallest average absolute price changes (3.5 percent), while NEIG shows the largest (16.0 percent), with food and services lying in the intermediate range. Across all sectors, price decreases are somewhat larger in magnitude than price increases.

Price-setting behavior differs substantially between online and offline collection modes. The most striking difference is in the frequency of price changes: prices collected exclusively online adjust far more frequently than offline prices (38.7

versus 25.2 percent). The size of price changes is somewhat larger for fully online items (12.2 percent) than for offline items (8.5 percent), though this difference is modest relative to the gap in frequencies. Partially online items display the largest average absolute price changes (29.4 percent), but this reflects the composition of that group—predominantly clothing, footwear, furniture, and furnishings—where seasonal cycles and promotional pricing generate large but infrequent discounts. Controlling for sectoral composition, the dominant feature of online price collection is thus a pronounced increase in the frequency of adjustment with little change in the underlying size, consistent with a reduction in the frictions associated with changing prices in online environments.

Taken together, the cross-sectional evidence establishes three broad determinants of price rigidity: the volatility and observability of input costs, which explain the energy–services contrast; institutional and regulatory constraints, which account for the rigidity of healthcare, education, and communications; and the pricing mode, with online collection acting as an amplifier of flexibility that operates largely independently of the sectoral pattern. The last of these has grown in importance over our sample period, as documented in the time-series evidence below.

3.3 *Time-series perspective on price setting*

Figure 1 illustrates the evolution of the cross-sectional distributions of price-setting moments from January 2008 to December 2025, including the frequency of price changes (top panel) and their absolute size (bottom panel). For each moment, the figure shows the monthly mean, median, interquartile range (dark-shaded area), and the 15th–85th percentile range (light-shaded area) across varieties.[22]

The figure reveals substantial time variation in both moments, reflecting the presence of high-frequency fluctuations as well as slower-moving changes in price-setting behavior. At higher frequencies, both moments exhibit pronounced variation. Some of this movement is seasonal, with the frequency of price changes typically higher in the early part of the year and declining over subsequent months.[23] Other high-frequency movements reflect macroeconomic shocks, such as the sharp increase in the frequency of price changes in early 2015 following the marked appreciation of the Swiss franc after the Swiss National Bank discontinued the

minimum exchange rate against the euro.[24] By contrast, low-frequency variation is particularly visible in the evolution of the frequency of price changes, whereas the size of price changes varies much less over time. In the years preceding the COVID-19 pandemic, the frequency of price changes rises steadily, accompanied by a gradual widening of the interquartile range of adjustment frequencies. During the pandemic, frequencies first fall below their pre-pandemic levels, accompanied by a narrowing of the distribution. This is then followed by a renewed increase in the frequency of price adjustments. Unlike the pre-pandemic period, however, this increase is broad-based: We observe not only an increase in the upper percentiles but an upward shift in the entire distribution of price adjustment frequencies.

Motivated by these observations, the following two sections analyze price-setting behavior separately before and during the pandemic in more detail.

3.3.1 *Price setting before the pandemic*

The average frequency of price changes increases slightly but steadily from 21.2 percent in 2008 to 28.9 percent in 2019, implying a gradual rise in price flexibility. This trend reflects equally more frequent price increases and decreases (see Figure C.1 in Online Appendix C.1). By contrast, the absolute size of price changes remains broadly stable over the same period—11.9 percent in 2008 and 10.6 percent in 2019—with no discernible trends in the size of either increases or decreases (see Figure C.1 in Online Appendix C.1).[25]

At the same time, the dispersion of price adjustment frequencies increases: the interquartile range widens as the upper tail of the distribution shifts upward more strongly than the lower tail. This pattern suggests that the increase in the average frequency is not the result of a broad-based tendency toward more frequent price changes but of a marked increase in price adjustment frequencies in a subset of the CPI.

The increase in adjustment frequency is not evenly distributed across the CPI basket (see Figure C.5 in Online Appendix C.4 for the full sectoral breakdown). Among the four main sectors, food and NEIG show the largest gains, while energy—already highly flexible—declines modestly and services rise only gradually; crucially, the increase is almost entirely absent among items collected offline, whereas items increasingly collected online exhibit a dramatic rise from 11.4 per-

cent in 2008 to 67.9 percent in 2019, pointing to the collection mode as the primary driver.

Among the products with the largest increases in adjustment frequency are those for which e-commerce has become the dominant retail channel. Although our microdata do not identify online prices at the level of individual price quotes or outlets, the 2016 revision of the Swiss CPI provides a unique source of quasi-experimental variation. In particular, from January 2016 onward, all prices for consumer electronics—which were previously collected in-store—began to be collected exclusively online, creating a clear item-level discontinuity (see Figure C.6 in Online Appendix C.4).

We exploit this discontinuity in an event-study framework contrasting items that switch to (fully or partially) online price collection with items that remain offline. Under the assumption of parallel pre-trends, this design identifies the causal effect of the transition to online price collection on price-setting behavior. To evaluate this assumption and trace both the dynamic and causal effects of the online transition, we estimate the following two-way fixed-effects event-study specification:

$$x_{v,t} = \alpha + \sum_{\ell \neq -1} \delta_\ell \left(\mathrm{T}_v \times \mathbb{1}\{t - t_0 = \ell\} \right) + \lambda_v + \theta_t + \varepsilon_{v,t}, \tag{1}$$

where $x_{v,t}$ denotes the monthly price-setting moment (either the frequency or absolute size of price changes) for variety v in month t, and t_0 is the January 2016 switch date. The indicator T_v identifies items that transition to fully online price collection (consumer electronics) on January 2016, or, in a separate specification, items that are already partially collected online, with both groups compared to items that remain offline throughout the sample. The event-time indicators $\mathbb{1}\{t - t_0 = \ell\}$ index months relative to the switch, with $\ell = -1$ as the omitted reference period. To isolate the effect of the pricing mode, we include variety fixed effects, λ_v, which capture all time-invariant characteristics specific to the product. In addition, time fixed effects θ_t control for aggregate shocks.

The coefficients δ_ℓ represent the within-item change in price-setting behavior at event time ℓ for treated items relative to always-offline items, net of aggregate time effects. Pre-treatment coefficients ($\ell < 0$) provide a direct test of the parallel-trends assumption, while post-treatment coefficients ($\ell \geq 0$) trace the dynamic causal effect of the online transition. The event-study plots in Figure 2 visualize

these δ_ℓ estimates and their confidence intervals. Standard errors are clustered at the variety level. Corresponding average difference-in-differences estimates are reported in Table C.1 in Online Appendix C.4.

The left panel of Figure 2 shows that pre-2016 coefficients for the frequency of price changes are small and statistically indistinguishable from zero, indicating no evidence of differential pre-trends between treated and control items. At the switch date, we observe a sharp and highly significant increase in the frequency of price changes for fully online items, on the order of 20–25 percentage points relative to the month before the transition. This increase persists throughout the post-period, indicating a sustained rise in price flexibility following the move to online price collection. Partially online items, by contrast, exhibit at most a modest and statistically insignificant response.

The right panel of Figure 2 shows that the online transition has little effect on the absolute size of price changes. While point estimates fluctuate around zero, they remain imprecisely estimated and economically small relative to the pronounced increase in adjustment frequency. Taken together, the event-study evidence indicates that the shift to online price collection primarily affects the frequency of price adjustments rather than their size—consistent with a reduction in menu costs or frictions associated with online price setting—and highlights the key channel through which e-commerce raises the aggregate frequency of price changes: as the FSO progressively shifted price collection toward internet sources, the rising share of online-collected prices in the CPI microdata raised measured adjustment frequencies sharply. Our event-study identifies this effect cleanly, with no differential pre-trend and no change in the size of adjustments at the switch date, isolating it from concurrent macroeconomic developments.

Taken together, the evidence from the pre-pandemic period suggests that the growing relevance of online prices contributed materially to the observed increase in the overall frequency of price changes.[26] These findings are consistent with evidence from other datasets and strengthen a broader empirical consensus. Cavallo (2018a) documents an increase in the frequency of price changes among US multi-channel retailers between 2008 and 2017, attributing it to the rise of Amazon-driven online competition; Gorodnichenko and Talavera (2017) and Gorodnichenko et al. (2018) show that prices in online marketplaces are substantially more flexible than those recorded in traditional in-store microdata. Our analysis reinforces this mechanism from a complementary vantage point: while

these studies measure online pricing from the demand side using web-scraped data, we observe the same phenomenon from the supply side of official CPI collection, with our event-study providing causal identification that complements the correlational evidence from scraping-based datasets. Together, the two perspectives confirm that the structural change in retail markets—toward online competition, dynamic pricing, and reduced menu costs—has materially increased price flexibility in the data underlying national CPIs.

3.3.2 *Price setting during the pandemic*

We next analyze how the COVID-19 pandemic affected price-setting behavior in Switzerland. Two data sources provide useful context for interpreting the evolution of price adjustments. First, the KOF Stringency Index traces the severity of non-pharmaceutical government interventions—such as business closures, restrictions on gatherings, and travel limitations—offering a continuous measure of the intensity of public-health measures over time.[27] The left panel of Figure 3 illustrates the evolution of containment policies, capturing the partial lockdown in spring 2020, the subsequent easing, and the renewed restrictions during the second wave in late 2020 and early 2021. Second, debit card transaction data capture sharp fluctuations in consumer spending across sectors.[28] The right panel of Figure 3 plots monthly average transaction values by merchant category, expressed as percentage deviations from their January 2020 level. The figure shows that private consumption contracted abruptly in spring 2020 and again, though less strongly, in late autumn 2020. This contraction was highly uneven across sectors: spending in contact-intensive services (entertainment, accommodation, restaurants) collapsed and recovered only slowly, whereas spending on food, beverages, and tobacco rose above 2019 levels throughout. Other categories experienced a temporary decline followed by a relatively swift rebound. Taken together, the evolution of containment policies and the sharp, sector-specific shifts in consumer spending imply substantial changes in the economic environment faced by firms, motivating a detailed examination of price-setting behavior during the pandemic.

The top row of Figure 4 plots the frequency and the absolute size of price changes from January 2020 to December 2022, benchmarked against their pre-pandemic means (dashed lines) and dispersion (shaded areas), calculated from January

2018 to December 2019. Following the outbreak in early 2020, the frequency of price changes fell markedly below its pre-pandemic level and remained subdued throughout much of the year. It averaged 26.2 percent in 2020, about 2.7 percentage points below the pre-pandemic mean, with both price increases and price decreases contributing to the decline (Figure C.7 in Online Appendix C.5). From early 2021 onward—and more visibly into 2022—the frequency of price changes rose sharply and exceeded its pre-pandemic level, driven primarily by a surge in the frequency of price increases. This reversal reflects both the normalization of economic activity and the release of pent-up demand following the lifting of containment measures, as well as the post-pandemic inflation shock, fueled by global supply-chain disruptions as well as rising energy and input costs following the Russian invasion of Ukraine.

In contrast to the frequency of price changes, the absolute size of price changes declined at the onset of the pandemic. The average absolute size was 10.0 percent in 2020, around 0.6 percentage points below the 2018–2019 average. Both price increases and decreases became smaller in absolute value (Figure C.7 in Online Appendix C.5), with the compression most pronounced during the first wave in spring 2020 and the resurgence in early 2021. While the frequency of price changes began to rise again from 2021 onwards, the size of price changes remained relatively stable at a lower level for a protracted period. This pattern suggests that the primary margin of adjustment during the pandemic operated through the timing of price changes rather than their magnitude.

Temporary sales represent an additional adjustment margin. The bottom row of Figure 4 shows that the frequency of sales rose substantially in 2020, more than doubling to 5.0 percent relative to its pre-pandemic average, while the size of discounts declined noticeably by 2.3 percentage points to 23.3 percent. The patterns are most pronounced in NEIG (Figure C.10 in Online Appendix C.5): the share of sale prices roughly doubled at the height of the first wave—exceeding 20 percent in July 2020—before declining below its pre-pandemic average as conditions normalized. Discounts became significantly smaller than in the preceding two years. Service prices, where temporary sales are structurally rare, nevertheless exhibited a tripling of sale frequency during the pandemic. By contrast, the frequency of sales declined in the food sector, consistent with the positive demand shock associated with at-home consumption. Taken together, these findings show that temporary sales responded strongly to large, aggregate shocks such as the

pandemic-induced demand shifts: retailers in negatively affected sectors used smaller but more frequent discounts to cushion lost revenues, while sectors experiencing positive demand reduced the use of sales. This is consistent with evidence that sales frequencies behave countercyclically (e.g., Klenow and Willis, 2007; Kryvtsov and Vincent, 2021) and with findings for European supermarkets during the pandemic (Henkel et al., 2023).

While the aggregate frequency of price changes displays only a muted response to the pandemic, this pattern is somewhat misleading. The aggregate conceals substantial cross-sectional heterogeneity: some sectors (most notably contact-intensive services and discretionary goods) sharply reduced their price adjustment frequencies, whereas others—such as food and selected NEIG categories—adjusted prices more often.[29] These opposing movements largely offset one another in the aggregate, leading to a surprisingly small net effect. To relate this heterogeneity systematically to pandemic conditions, we link item-level price-setting moments with the KOF Stringency Index and sector-specific debit card data. The stringency index provides a time-varying measure of the severity of government interventions, while the debit card data allow us to approximate sector-specific demand changes in real time. Matching NOGA merchant categories to COICOP items enables us to classify products according to whether they experienced positive or negative demand shocks during the pandemic. Positive shocks are concentrated in food and beverages (COICOP divisions 1 and 2), where spending increased by roughly 38 percent in 2020. Negative shocks are most pronounced in restaurant and hotel services (COICOP 11), recreation and culture (e.g., sports, leisure activities, cinemas, theaters, museums), package holidays, air transport, rental cars, and selected personal care goods.

We then quantify these relationships using panel regressions of item-level price-setting moments on the change in debit card spending relative to January 2020, the KOF stringency index, and their interaction, controlling for item fixed effects. Table 4 provides the results. Estimating the two drivers individually yields two main results. First, higher stringency—as observed during lockdown episodes—is associated with fewer price adjustments: the negative coefficient on stringency for the frequency of price changes indicates that stricter measures systematically dampened firms' propensity to reprice.[30] Second, declines in consumer spending are likewise associated with fewer price adjustments. Debit card spending fell sharply during the pandemic for most sectors, so the positive coefficient on debit

card spending—indicating that higher spending is associated with more frequent adjustments—implies that the demand collapse reduced the frequency of price changes.

The interaction of the two variables provides a way to assess whether higher stringency and weak demand reinforce one another in dampening firms' price adjustments. The negative interaction term for the frequency of price changes shows that the dampening effect of higher stringency is amplified when demand is weak: when spending fell sharply, rising stringency further reduced the likelihood of price adjustments, whereas in periods and sectors of relatively robust demand, the effect of stringency was attenuated. Since debit card spending is expressed as a deviation from its January 2020 level, negative values correspond to demand contractions; the negative interaction coefficient therefore means the dampening effect of stringency is largest precisely when spending is below baseline.

A complementary pattern emerges for the intensive margin. Items experiencing larger demand contractions exhibit larger absolute price changes, despite adjusting less frequently. This asymmetry is consistent with a model in which firms facing collapsing demand delay repricing until their price gap becomes too large to ignore, at which point the required adjustment is correspondingly large. The pandemic thus compressed the extensive margin (fewer firms repricing) while amplifying the intensive margin (larger adjustments when firms did reprice), a pattern that foreshadows the state-dependent dynamics documented in the local projections of Section 4.2.2.

Additional regressions reported in Online Appendix C.5 show that these patterns persist when separating price increases from price decreases (Table C.3), and that the effects on the size of adjustments are driven primarily by the size of price decreases (Table C.4). Further results for sales-related price changes yield coefficients of opposite signs for the frequency of sales, consistent with the countercyclical behavior of temporary discounts documented in the descriptive evidence (Table C.5). Overall, the regression results reinforce the interpretation that both demand contractions and containment measures shaped firms' pricing decisions during the pandemic, operating jointly to reduce the frequency of price adjustments and compress their size in the most affected sectors.

These panel regression results complement the local projections analysis in Section 4 in an important way. The LP framework studies the average and state-

dependent response of price-setting margins to well-identified aggregate shocks, with the pandemic period controlled for by dummy variables. The panel regressions study the pandemic period specifically and exploit variation in two distinct shock types—a demand shock (debit card spending) and a policy-driven supply disruption (the stringency index)—at the item level. The finding that both shocks reduce the frequency of price changes, with the largest effects when they coincide, provides item-level evidence that shock type interacts with the economic environment in shaping which margin of adjustment responds—the same interaction that the nonlinear local projections detect through the sufficient statistic.

4 MACRO IMPLICATIONS OF PRICE-SETTING BEHAVIOR

Understanding which margin of price adjustment—the frequency or the size of individual price changes—drives aggregate inflation dynamics is central to evaluating competing models of price rigidity and designing monetary policy. Time-dependent models predict that the extensive margin (frequency) is insensitive to economic conditions, so all adjustment passes through the intensive margin (size). State-dependent models predict the opposite: the extensive margin responds endogenously to shocks, and this response varies with the state of the price-change distribution. Empirically distinguishing between these predictions requires data that span both normal times and episodes of elevated price flexibility—precisely what our eighteen-year Swiss CPI panel provides. This section analyzes how the frequency and size of price changes contribute to variations in inflation (Section 4.1) and, more directly, how these margins respond to identifiable aggregate shocks (Section 4.2).

4.1 *Contributions of the frequency and size of price changes to variations in inflation*

Following Klenow and Kryvtsov (2008) or Wulfsberg (2016), we approximate the monthly item-level inflation rate $\hat{\pi}_{i,t} = f_{i,t} \cdot \Delta p_{i,t}$, where $f_{i,t}$ is the frequency of price changes and $\Delta p_{i,t}$ is the mean of non-zero log price changes. We then construct counterfactual inflation series that isolate the contributions of the frequency and size margins by holding one constant at its item-specific mean while allowing the other to vary; the formal definitions and scatter plots are provided in Online

Appendix E.1.

Two results stand out. First, holding frequencies fixed while allowing sizes to vary yields a correlation with inflation of 0.83, against only 0.20 when sizes are fixed and frequencies vary (Table 5). Variations in the size of price changes dominate inflation dynamics on average, lending support to time-dependent pricing models such as Calvo (1983), which predict that the probability of adjustment is insensitive to the state of the economy and that all variation in inflation is driven by variation in the size of price changes. This result is in line with findings for the United States (Klenow and Kryvtsov, 2008) and the euro area (Gautier et al., 2024).

Second, this picture changes when price increases and decreases are considered separately. Holding the sizes of increases and decreases fixed while allowing their frequencies to vary raises the correlation to 0.79; the reverse counterfactual yields 0.60. The stark contrast between these two results and the total-frequency counterfactual—which yields only 0.20 despite allowing the frequency of all price changes to vary—is explained by the opposing cyclical movements of the two margins: when the frequency of price increases rises, the frequency of price decreases tends to fall, and vice versa. As a result, the total frequency of price changes remains relatively stable, suppressing its contribution to inflation variation, while the individual frequencies of increases and decreases each contribute substantially when considered separately.

The extensive margin is therefore not dormant—it operates through the composition of the price-change distribution rather than its total size, pointing toward important asymmetries that purely Calvo models cannot generate. These findings are consistent with evidence for the euro area (Gautier et al., 2024) and Norway (Wulfsberg, 2016). The local projections in the next section investigate whether this asymmetric extensive margin becomes the dominant channel of shock transmission in specific states of the economy.

4.2 *Response of price setting and inflation to aggregate shocks*

This section analyzes how counterfactual inflation rates respond to various aggregate shocks in order to identify the margins of price adjustment that drive the inflation responses. Using the local projections regression framework introduced by Jordà (2005), we estimate the dynamic effects of four distinct aggregate

shocks spanning different transmission channels: oil supply news shocks (Känzig, 2021)[31], which operate through energy and input costs; Swiss franc safe haven shocks (Boneva, 2024), which transmit via the exchange rate and import prices; supply chain shocks (Känzig and Raghavan, 2026)[32], which capture disruptions to global trade and intermediate goods availability; and monetary policy shocks (Nitschka and Oktay, 2023), which affect demand and the overall price level.[33] The four shocks were chosen to cover the main channels through which aggregate disturbances reach consumer prices in a small open economy.

The analysis proceeds in two steps. First, we employ linear local projections to estimate the average inflation responses to the shocks, assuming homogeneity in their transmission (Section 4.2.1). This approach closely follows Gautier et al. (2024). Second, we extend the framework to nonlinear local projections to account for potential state dependence in the transmission of the shocks, allowing for time variation in price-setting moments and aggregate price flexibility (Section 4.2.2).

4.2.1 *Linear local projections*

For each shock, S_t, the estimated linear local projections model is:

$$\pi^*_{i,t-1,t+h} = \alpha_{i,h} + \alpha_{m,h} + \beta_h S_t + \gamma_h X_t + \varepsilon_{i,t_h} \tag{2}$$

where $\pi^*_{i,t-1,t+h}$ represents the cumulated inflation rate for item i between periods $t-1$ and $t+h$, $\alpha_{i,h}$ are item fixed effects, $\alpha_{m,h}$ are month fixed effects, and ε_{i,t_h} are error terms. In all versions of this equation, X_t includes one lag of monthly changes in industrial production[34] and in the exchange rate of the Swiss franc against the euro as control variables. Furthermore, to mitigate the influence of extreme outliers related to the COVID-19 pandemic, we include exogenous dummy variables equal to one during months with pandemic containment measures (i.e., during the period from February 2020 to May 2021 in Switzerland, see Table A.2 in Online Appendix A.2) and zero otherwise.[35] The coefficient β_h measures the response of π^*_j at time $t+h$ to the shock at time t.

We evaluate the response of inflation to the various shocks based on the recomposed inflation rate (Equation (21)) alongside four counterfactual inflation rates defined in Equation (19), Equation (20), Equation (22), and Equation (23), which isolate the contributions of the frequency and size margins by holding one con-

stant at its item-specific mean while allowing the other to vary. The sample covers the period from January 2008 to December 2025 and includes price changes due to temporary sales and product substitutions.[36] We focus exclusively on items consistently collected at a monthly frequency and further exclude energy items from the baseline dataset. Since prices are usually collected in the first two weeks of each month, we lead the cumulated inflation rates by one month to ensure that a shock in month t can only influence price-setting responses from month $t+1$ onward. The sequence of β_h coefficients, estimated separately for each horizon h, is interpreted as the impulse response function (IRF); standard errors are clustered at the item level to account for serial correlation induced by the cumulation of inflation rates at horizons $h > 0$.

Figure 5 plots the resulting IRFs. Rows correspond to the four shocks; columns to recomposed inflation and the four counterfactual inflation rates. The IRFs are rescaled to a 10 percent increase in monthly Brent crude oil prices (oil supply news shock), a 10 percent depreciation of the Swiss franc against the euro (safe haven shock), a 10 percent increase in real shipping costs as measured by the Baltic Dry Index (supply chain shock), and a 25 basis point reduction in the Swiss Average Rate Overnight (SARON, monetary policy shock)—all on impact, so that all shocks are expected to raise inflation.

The IRFs in the first column of Figure 5 display the effects of the various shocks on the recomposed inflation rate. The results show positive price responses to all shocks. However, adjustments occur at varying speeds. Inflation responds most rapidly to oil supply news shocks. Swiss franc safe haven shocks and supply chain shocks take more time to cumulate, and their effects on inflation peak later. Monetary policy shocks trigger the slowest response.

The second column holds the size of price changes fixed at its item-specific mean, so all variation in the counterfactual reflects frequency changes alone. The near-zero IRFs in this column show that the frequency of price changes does not respond to aggregate shocks on average. By contrast, assuming a constant frequency (third column) yields IRFs similar to those for the recomposed inflation reported in the first column. These results indicate that firms adjust the size rather than the frequency of price changes in response to aggregate shocks.

The dominance of the intensive margin can be rationalized by the structure of firms' pricing decisions. In time-dependent models, the probability of resetting a price is exogenous and thus unresponsive to aggregate conditions; variation in in-

flation is mechanically driven by the size of adjustments when a reset opportunity occurs. Even in state-dependent models, when the distribution of price gaps is far from the adjustment thresholds—as is typical in low-inflation environments—a common aggregate shock shifts all price gaps similarly but triggers repricing only for firms already near their thresholds. As long as the mass of firms near the threshold is small relative to the total, the effect on the frequency of adjustment is negligible, and the aggregate inflation response is dominated by the intensive margin. This is precisely the mechanism underlying the "selection effect" in menu-cost models (Golosov and Lucas, 2007): only firms with near-optimal prices reset, and the idiosyncratic price change of those firms is large. The implication for aggregate dynamics is that, in normal times, the intensive margin is the primary channel through which inflation responds to aggregate shocks—which is what we find for the average response.

Figure 5 further reports IRFs associated with counterfactual inflation calculated by assuming constant sizes (fourth column) and constant frequencies (fifth column) of price increases and decreases. The results show that assuming constant sizes of price increases and decreases leads to IRFs closely mirroring the corresponding IRFs of recomposed inflation, underscoring the importance of frequency adjustments. Thus, aggregate shocks affect the price change distribution primarily by altering the shares of price increases and decreases rather than their sizes. Overall, the price-setting behavior reflected in the IRFs is consistent with the predictions of Calvo (1983). This result is broadly consistent with evidence from the euro area (Gautier et al., 2024), which finds that size rather than frequency dominates the inflation response to aggregate shocks. The Swiss evidence replicating these findings supports the interpretation that time-dependent behavior is a generic feature of pricing in advanced economies during periods of low and moderate inflation, rather than an artifact of any particular country or dataset.

Online Appendix E.8 presents sectoral results on inflation responses to the various shocks. Oil supply news shocks drive price increases across all sectors, with the most pronounced and immediate effect on energy prices (Figure E.12). Swiss franc safe haven shocks primarily impact food prices and, to a lesser extent, NEIG (Figure E.13). Supply chain shocks have a particularly strong effect on NEIG and energy prices (Figure E.14). Monetary policy shocks also influence food and NEIG prices, while their effect on services remains limited over the estimation horizon (Figure E.15).

These sectoral patterns are consistent with the theoretical predictions about shock type. The oil supply news shock operates primarily through energy costs and produces the fastest, largest response because energy prices are both highly flexible and a direct input cost across sectors. The safe haven shock transmits via the exchange rate and import prices, hitting food and NEIG hardest because of their higher import content. The supply chain shock has the strongest effect on NEIG and energy, consistent with traded goods being most exposed to global shipping disruptions. Monetary policy shocks are the slowest to cumulate, consistent with their operating primarily through aggregate demand rather than direct cost transmission. Crucially, across all four shock types, the linear results show that the intensive margin—the size of price changes—is the dominant channel of adjustment on average, with little evidence that the type of shock determines which margin responds. Whether this invariance holds under state dependence is the question taken up in the next section.

4.2.2 *Nonlinear local projections*

The linear results establish the baseline: on average, firms adjust the size of price changes, not their frequency, in response to aggregate shocks. This average behavior is informative but incomplete. As shown in Section 3.3, price-setting behavior varies substantially over time—the frequency and kurtosis of price changes are not constant, and their ratio has shifted with both the rise of online pricing and the pandemic inflation episode. In what follows, we ask whether the inflation response to shocks depends on the current state of the price-change distribution, using the sufficient statistic of Alvarez et al. (2016) as a summary measure of that state. The nonlinear framework complements the linear one: it reveals when and why the intensive-margin result breaks down.[37]

Alvarez et al. (2016) derive their sufficient statistic based solely on steady-state price-setting moments. However, using monthly price-setting moments could provide valuable insights into the evolution of monetary non-neutrality over time. For the nonlinear local projections estimates, we compute sufficient statistics at the item level for each month:

$$z_{i,t} = \frac{\text{Kur}(\Delta p_{i,t})}{f_{i,t}}, \tag{3}$$

where $\text{Kur}(\Delta p_{i,t})$ and $f_{i,t}$ are the kurtosis of the price change distribution and the frequency of price changes for item i in month t.

To explore potential state dependence in the transmission of aggregate shocks to inflation, we extend the linear model in Equation (2) to a nonlinear local projections framework, which conditions the inflation response $\pi^*_{i,t-1,t+h}$ for item i between periods $t-1$ and $t+h$ on the state variable $z_{i,t}$:

$$\begin{aligned}\pi^*_{i,t-1,t+h} = F(z_{t-1})\left(\alpha^L_{i,h} + \alpha^L_{m,h}\beta^L_h S_t + \gamma^L_h X_t\right) + \\ (1 - F(z_{t-1}))\left(\alpha^H_{i,h} + \alpha^H_{m,h}\beta^H_h S_t + \gamma^H_h X_t\right) + \varepsilon_{i,t_h},\end{aligned} \tag{4}$$

To model the transitions between states, we follow Granger and Teräsvirta (1993) and use the logistic function, which casts the state variable into the unit interval and smooths[38] the transitions between states:

$$F(z_{i,t}) = \frac{e^{-\gamma(z_{i,t}-\mu_{i,z})/\sigma_{i,z}}}{1 + e^{-\gamma(z_{i,t}-\mu_{i,z})/\sigma_{i,z}}} \in [0,1], \quad \gamma > 0. \tag{5}$$

Since the logistic function $F(z_{i,t})$ is decreasing in $z_{i,t}$, values of $F(z_{i,t})$ close to zero indicate states with a high degree of non-neutrality. Figure E.16 in Online Appendix E.9 displays the distribution of the smooth transition functions, $F(z_{i,t})$, aggregated across items using CPI expenditure weights. The distribution of smooth transition functions is relatively broad and centered around the mean of 0.5, suggesting that items with both low and high degrees of non-neutrality are identified over the sample period. It narrows and rises after 2015 and, even more so, in 2025, suggesting that there are more items with low degrees of non-neutrality in these periods.

Figure 6 shows the IRFs from the nonlinear local projections estimates using the item-level sufficient statistics as the state variables.[39] The rows represent the four shocks; the columns correspond to recomposed inflation and the four counterfactual inflation rates, rescaled as in Figure 5.

The first column reveals distinct inflation responses across regimes. When the sufficient statistic is high, the response of recomposed inflation is small and often statistically insignificant. When it is low—reflecting periods of elevated price flex-

ibility, strong price selection, or both—price responses are significantly positive, larger in magnitude, and faster to cumulate.

Examining the counterfactual columns isolates which margin drives these regime-specific responses. When the frequency of price changes is held constant (third column), the IRFs are not significantly different from zero in either regime for all shocks except supply chain shocks. When instead the size of price changes is held constant (second column), the IRFs are statistically significant during low-sufficient-statistic periods but not during high-sufficient-statistic periods. This finding differs from the linear local projections, where firms did not adjust the frequency of their price changes in response to aggregate shocks. The nonlinear framework reveals state-dependent pricing: the greater flexibility of the aggregate price level—driven by either more frequent price adjustments, stronger price selection, or both—enables firms to respond to shocks not only through the size but also through the frequency of price changes. This behavior aligns with predictions from state-dependent models of price rigidity and is consistent with empirical findings documenting an increase in the frequency of price changes in response to large shocks (Cavallo et al., 2024).

The nonlinear framework does not contradict the linear result; it identifies when the linear result fails. The average dominance of the size margin holds because the economy spends most of the sample in states where the sufficient statistic is moderate to high—precisely the states where Calvo pricing is a defensible approximation.

Lessons for macroeconomic modeling. The joint evidence from linear and nonlinear local projections delivers a nuanced message for modeling price rigidity. On average, and across four distinct types of aggregate shocks, inflation responds primarily through the intensive margin—the size of individual price adjustments—while the extensive margin (frequency) plays little independent role. Taken at face value, this average behavior is consistent with time-dependent pricing models such as Calvo (1983), which predict that the probability of adjustment is insensitive to the state of the economy and that all variation in inflation is driven by variation in the size of price changes.

However, this average disguises a fundamental regime switch. When the sufficient statistic is low—reflecting either a high frequency of adjustment, strong price selection, or both—firms respond to aggregate shocks along both margins

simultaneously: size *and* frequency increase together, the inflation response is faster and larger, and monetary non-neutrality is lower. This state-dependent behavior contradicts the pure Calvo prediction and is squarely in line with menu-cost or generalized Ss models (Golosov and Lucas, 2007; Woodford, 2009), which predict a nonlinear amplification of the inflation response as the economy moves toward adjustment thresholds. The practical implication is that the degree of monetary non-neutrality is time-varying and endogenous to the current state of the price-change distribution: calibrating a macro model to average moments—as is standard—risks overstating non-neutrality in high-flexibility regimes and understating it in high-rigidity regimes.

Time-dependent and state-dependent models are therefore not competing explanations of the data; they are each correct in their respective regimes. For normal-times analysis—when the sufficient statistic is near its historical average—a Calvo model calibrated to sample-average moments remains a valid and tractable benchmark. But when the statistic deviates materially from its average, a state-dependent framework with an endogenous adjustment hazard (e.g., Blanco et al., 2024; Karadi et al., 2025) is required to accurately characterize shock transmission. Crucially, the sufficient statistic, computable in real time from CPI microdata, provides an empirical model-selection criterion that is grounded in the observed distribution of price changes rather than in theoretical assumptions alone: when it is low, a state-dependent calibration is needed; when it is near its long-run level, a Calvo calibration suffices.

5 CONCLUSION

Understanding price rigidity—how often and by how much firms adjust prices—is essential for calibrating macroeconomic models and assessing the transmission of aggregate shocks to inflation. This paper uses the microdata underlying the Swiss CPI from January 2008 to December 2025 to revisit these questions across a sample period that spans a decade of low inflation and rising e-commerce, the COVID-19 pandemic and its aftermath, and the sharpest inflation surge Switzerland has experienced in three decades.

The main findings can be summarized as follows. First, the frequency of price changes rose steadily in the decade before the pandemic, driven disproportionately by items increasingly collected online. We provide causal evidence for this

channel using an event-study design around the 2016 transition of consumer electronics prices from in-store to online collection: the frequency of price changes jumped by 20–25 percentage points at the switch date with no differential pre-trend and little change in the size of adjustments. The finding replicates, from the supply side of official CPI collection, the pattern documented for US multi-channel retailers by Cavallo (2018a), and confirms that the structural shift in retail markets toward online competition and dynamic pricing has materially increased price flexibility in the data underlying national consumer price indices.

Second, the pandemic produced a surprisingly muted aggregate frequency response, masking large and opposing cross-sectional movements. Panel regressions linking item-level price-setting moments to sector-specific debit card spending and the KOF Stringency Index show that demand contractions and stricter government interventions each independently reduced the frequency of price adjustments, with the largest effects when both forces coincided. Items facing demand contractions also exhibit larger individual price changes despite adjusting less often, consistent with firms delaying repricing until the accumulated price gap becomes too large to ignore. Temporary sales responded countercyclically across sectors: retailers in negatively affected sectors used more frequent but smaller discounts to cushion lost revenue, while food retailers—facing positive demand shocks—reduced the use of sales. The pandemic thus compressed the extensive margin while amplifying the intensive margin in the most affected sectors.

Third, the local projections analysis delivers a nuanced message for macroeconomic modeling. On average and across four distinct types of aggregate shocks, inflation responds primarily through the size of price changes rather than their frequency, consistent with time-dependent pricing (Calvo, 1983). Models calibrated to sample-average moments thus remain a valid benchmark for normal-times policy analysis. However, this average disguises a fundamental regime switch. When price flexibility is high or price selection is strong—as reflected in a low ratio of kurtosis to adjustment frequency—firms respond to aggregate shocks along both margins simultaneously, the inflation response is faster and larger, and monetary non-neutrality is lower. Time-dependent and state-dependent models are therefore not competing explanations: they are each correct in their respective regimes. The practical implication is that this ratio, computable in real time from CPI microdata, provides an empirical model-selection indicator for policymak-

ers and researchers, while models with an endogenous adjustment hazard (e.g., Blanco et al., 2024; Karadi et al., 2025) are better suited when that indicator signals elevated price flexibility.

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Notes

1 Klenow and Malin (2010), Nakamura and Steinsson (2013), Luo and Villar (2025), and Dedola et al. (2025) provide comprehensive surveys.

2 The data have been provided to the Swiss National Bank and the KOF Swiss Economic Institute at ETH Zurich by the Swiss Federal Statistical Office based on a confidentiality agreement and cannot be shared.

3 Because the packaging size may change within a price series, we adjust prices to a consistent unit price to ensure that packaging variations do not introduce spurious price changes.

4 To compute aggregate statistics, we use time-varying (i.e., yearly) CPI weights, similar to Klenow and Kryvtsov (2008). An alternative approach consists of using time-invariant CPI weights similar to Nakamura and Steinsson (2008).

5 The data are assembled as part of the overall market survey for online retail in Switzerland by HANDELSVERBAND.swiss together with GfK and in cooperation with Swiss Post (HANDELSVERBAND.swiss, 2022).

6 Consumer electronics includes the following items: telecommunication equipment; television sets; audiovisual appliances; photographic, cinematographic equipment and optical instruments; IT peripheral devices and accessories; computer software; storage devices and contents; games, toys and hobbies; and game consoles and electronic games.

7 Table A.1 in Online Appendix A.1 provides a complete list of fully online and partially online items.

8 See Table A.3 in Online Appendix A.3 for the complete list of index-based items excluded from the analysis.

9 See Table A.3 in Online Appendix A.3 for the complete list of items of (semi-)administered prices excluded from the analysis.

10 See Online Appendix D.1 for a discussion of measurement errors in price changes.

11 See Online Appendix D.2 for a discussion of the sensitivity of the price-setting moments to alternative thresholds for trimming price changes.

12 These differences may be influenced by the fact that national statistical offices apply different rules for classifying a price as a sales price or for product substitutions.

13 Kaufmann (2009) reports a median frequency of price changes of 15.4 percent in Swiss CPI microdata from 2000 to 2005. However, this figure is not directly comparable to our result, as it is based on quarterly data and assumes at most one price change per quarter.

14 Kaufmann (2009) reports a median absolute size of price changes of 13.6 percent in quarterly Swiss CPI microdata from 2000 to 2005. However, comparing this figure with our result does not carry much practical significance because it is based on quarterly data.

15 Studies using US data find similar effects: excluding temporary sales reduces the mean frequency of price changes from 26.5 percent to 22.8 percent (Nakamura and Steinsson, 2008). For the euro area, Gautier et al. (2024) report a decline from 12.3 percent to 8.5 percent.

16 In our baseline specification, we exclude price changes due to temporary sales by replacing any price flagged as a sales price by the FSO with the last non-sales price. We assess the robustness of our results to alternative sales filters by applying the symmetric V-shaped filter proposed by Nakamura and Steinsson (2008) and the running-mode filter proposed by Kehoe and Midrigan (2015). Table B.3 and Table B.4 in Online Appendix B.3 show that, except for the V-shaped filter with a three-month window, the resulting moments are close to those obtained under the baseline approach.

17 Studies using US data find similar effects: excluding product substitutions reduces the mean frequency from 27.7 percent to 26.5 percent (Nakamura and Steinsson, 2008) and from 26.1 percent to 23.6 percent (Bils and Klenow, 2004). For the euro area, Gautier et al. (2024) report a decline from 13.6 percent to 12.3 percent.

18 Table B.9 in Online Appendix B.6 reports corresponding median moments.

19 Table B.10, Table B.11, and Table B.12 in Online Appendix B.6 summarize cross-sectional price-setting moments for the samples including and excluding price changes due to temporary sales and product substitutions.

20 Additional granularity is provided in Table B.13 in Online Appendix B.6, which reports average price-setting moments at the item (five-digit COICOP subclass) level.

21 Regional heterogeneity is shown in Table B.14 in Online Appendix B.7, which reports moments for the eleven price-collection regions of Switzerland.

22 Online Appendix C.1 presents analogous cross-sectional distributions for additional price-setting moments, including the frequency and absolute size of price increases and decreases, as well as the frequency and size of temporary sales.

23 Additional evidence on the seasonality of price changes in Switzerland—based on regressions of monthly frequency and size of price adjustments on month fixed effects, with and without sales—is provided in Online Appendix C.2. Similar seasonal adjustment patterns have been documented extensively in consumer price microdata across countries, including the euro area (Gautier et al., 2024), the United Kingdom (Seiler, 2025), the United States (Nakamura and Steinsson, 2008, 2013), Belgium (Aucremanne and Dhyne, 2004), and France (Berardi et al., 2015).

24 The Swiss National Bank enforced a minimum exchange rate of 1.20 CHF per euro from 6 September 2011 to 15 January 2015. After the discontinuation of the minimum exchange rate floor, the Swiss franc appreciated sharply before stabilizing at approximately 1.10 CHF per euro in 2015 and 2016.

25 These findings are robust to alternative data treatments (e.g., the exclusion of temporary sales or product substitutions), methodological changes in price collection (i.e., changes in the basket composition, changes in the price collection frequency, or the introduction of scanner data), and the use of constant rather than time-varying basket weights when aggregating item-level frequencies of price changes (see Figure C.3 in Online Appendix C.3). Furthermore, we find that the increase in the frequency of price changes is not the result of an increase in the number of goods sold per outlet (see Figure C.4 in Online Appendix C.3).

26 Beyond the shift to online price collection, other structural factors may contribute to rising flexibility. These include regulatory and institutional constraints (Lünnemann and Mathä, 2005), intensified competition from globalization and high-frequency retailers (Bils and Klenow, 2004; Anderson et al., 2017; Auer and Schoenle, 2016), and the diffusion of dynamic pricing algorithms (Chen and Gallego, 2019). Price-setting in small open economies also remains sensitive to input-cost volatility and exchange-rate shocks (Gopinath and Itskhoki, 2010). Our variety-level fixed effects help control for these additional dimensions of heterogeneity.

27 The KOF Stringency Index is constructed by Pleninger et al. (2022) and closely follows the classification scheme of the Oxford COVID-19 Government Response Stringency Index (Hale et al., 2021), with several adaptations to account for institutional features specific to Switzerland.

28 These data are based on aggregated and anonymized debit card transactions conducted in Switzerland (Brown et al., 2023) and have been used, for example, to track real-time economic activity (Burri and Kaufmann, 2020) and to study weighting bias in inflation measurement (Seiler, 2020).

29 We provide detailed evidence on the cross-sectional heterogeneity in the frequency and size of price changes during the pandemic in Online Appendix C.5.

30 In Table C.2 in Online Appendix C.5, we regress the price-setting moments on the subindices of the KOF Stringency Index to disentangle containment measures with stronger and weaker effects. Among the COVID-related restrictions with the strongest effects on the frequency of price adjustments are cancellations of public events, school closure and international travel controls. The weakest effects are found for restrictions on gatherings.

31 The oil supply news shock series of Känzig (2021) ends in June 2025 at the time of writing. The local projections are therefore estimated on the truncated sample 2008:01–2025:06 for this shock.

32 The supply chain shock series of Känzig and Raghavan (2026) ends in December 2023 at the time of writing. The local projections are therefore estimated on the truncated sample 2008:01–2023:12 for this shock.

33 Online Appendix E.2 provides more information on the shock variables used in the local projections estimations. Figure E.2 in Online Appendix E.2 shows the time series of the shocks over the sample period.

34 We approximate industrial production in Switzerland using the monthly KOF barometer (Abberger et al., 2014).

35 Online Appendix E.3 provides an analysis of the robustness of our baseline results to the inclusion of the pandemic period in the estimation. The resulting IRFs are qualitatively very similar, although more volatile, than those obtained when the pandemic is excluded.

36 Online Appendix E.4 provides an analysis of the robustness of our baseline results to the treatment of temporary sales and product substitutions. The IRFs are qualitatively similar when price changes due to temporary sales (Figure E.5), or product substitutions (Figure E.6), or both (Figure E.7) are excluded.

37 Several empirical studies document that the frequency of price changes increases with inflation (e.g., Gagnon, 2009; Nakamura et al., 2018; Alvarez et al., 2019; Karadi and Reiff, 2019) and during the pandemic (e.g., Montag and Villar, 2022;

Blanco et al., 2024; Seiler, 2025). Cavallo (2018a) documents an increase in the frequency of price changes driven by online competition in US multi-channel retailer data. Cavallo et al. (2024) document changes in price-setting behavior depending on the size of the aggregate shock.

38 The transition function standardizes the state variable $z_{i,t}$ by subtracting its mean $\mu_{i,z}$ and dividing it by its variance $\sigma_{i,z}$. This splits the estimates roughly equally between the two states over the estimation period. The parameter γ determines the intensity of the switching between states as $z_{i,t}$ changes. Higher values of γ mean that $F(z_{i,t})$ spends more time near the bounds of the unit interval, bringing the model closer to a discrete regime switching setup. We set $\gamma = 3$, which gives an intermediate level of regime switching intensity.

39 In the Online Appendix, we report several robustness checks for the nonlinear local projections. In Online Appendix E.5, we consider alternative state variables based on the frequency of price changes alone and the kurtosis alone, rather than their ratio. In Online Appendix E.6, we consider alternative values of the transition-function intensity parameter ($\gamma \in \{1, 2, 5\}$). In Online Appendix E.7, we consider alternative lag structures. The qualitative findings—that price responses are stronger and involve both margins during low-sufficient-statistic periods—are robust across all specifications.

6 TABLES

Table 1. Summary of the data sample

	Jan 2008 – Dec 2025	CPI weight (%)
Price quotes		
Total	10,639,021	55.4
Average per month	49,255	
Price spells	198,877	
Temporary sales	549,096	
Substitutions	357,950	
Outlets	4,159	
Expenditure items	296	
Varieties	1,386	
Sample composition (%)		
Food	32.1	13.2
NEIG	46.3	17.7
Energy	3.1	4.0
Services	18.5	20.5

Notes: Summary statistics of the data sample covering January 2008 to December 2025, after applying the sampling decisions described in Section 2.6. "Price series" counts unique product–outlet combinations with at least two consecutive monthly price quotes. "Temporary sales" and "Substitutions" count the corresponding price observations as shares of all price quotes (see Section 2.3 and Section 2.4). CPI weights refer to average expenditure weights over the sample period, in percent.

Table 2. Aggregate price-setting moments

	Frequency of price adjustments					Size of price adjustments						
	Changes	Increases	Decreases	Sales	Share of Increases	Absolute Changes	Average Changes	Increases	Decreases	Sales	Std. dev.	Kurtosis
	f	f^+	f^-	f^s	$\frac{f^+}{f}$	$\lvert\Delta p\rvert$	Δp	Δp^+	Δp^-	$\lvert\Delta p^s\rvert$	sd($\lvert\Delta p\rvert$)	Kur(z)
Including sales, including substitutions												
Mean	26.0	13.8	12.2	2.3	55.9	10.7	0.3	10.1	-11.1	26.4	8.1	4.0
Median	16.2	6.6	5.3	0.0	55.6	7.6	0.6	6.8	-7.9	23.8	6.6	2.9
Excluding sales, including substitutions												
Mean	24.1	12.9	11.2		56.8	8.0	0.6	7.6	-8.3		6.2	3.9
Median	12.1	5.3	3.7		57.1	6.2	0.6	5.6	-6.1		4.9	2.7
Including sales, excluding substitutions												
Mean	24.1	12.6	11.4	2.3	55.8	10.3	-0.1	9.4	-10.9	26.1	7.6	3.9
Median	13.9	5.5	4.3	0.0	55.6	7.0	0.5	6.2	-7.3	23.6	6.1	2.8
Excluding sales, excluding substitutions												
Mean	22.3	11.9	10.3		57.4	7.1	0.6	6.7	-7.3		5.4	3.8
Median	10.0	4.2	2.6		57.9	5.5	0.6	5.0	-5.3		4.3	2.6

Notes: Aggregate price-setting moments for the Swiss CPI microdata sample from January 2008 to December 2025. Each panel corresponds to a different treatment of temporary sales and product substitutions. The frequency measures are weighted averages of variety-level shares of price changes, increases, decreases, and sales-related price changes, respectively. "Share of increases" is the share of price increases in all non-zero price changes. The size measures are weighted averages of the mean log price change ("Average"), the mean absolute log price change ("Absolute"), the mean size of price increases and decreases, the mean absolute size of sales-related price changes, the standard deviation of absolute log price changes, and the kurtosis of standardized price changes. All moments are first computed at the variety level and then aggregated as a weighted mean or median across varieties using CPI expenditure weights. Values are reported in percent per month.

Table 3. Cross-sectional price-setting moments

		Frequency of price adjustments					Size of price adjustments						
	Weight	Changes	Increases	Decreases	Sales	Share of Increases	Absolute Changes	Average Changes	Increases	Decreases	Sales	Std. dev.	Kurtosis
		f	f^+	f^-	f^s	$\frac{f^+}{f}$	$\lvert\Delta p\rvert$	Δp	Δp^+	Δp^-	$\lvert\Delta p^s\rvert$	sd($\lvert\Delta p\rvert$)	Kur(z)
Food	13.2	30.5	16.2	14.3	1.2	53.6	8.1	0.3	7.9	-8.2	24.1	7.7	4.4
Unprocessed food	3.5	45.7	23.0	22.7	1.5	50.8	10.5	0.1	10.2	-10.1	27.9	9.5	5.2
Processed food	9.7	25.3	13.8	11.5	1.1	54.6	7.3	0.4	7.1	-7.5	22.3	7.1	4.2
NEIG	17.6	18.5	9.5	9.0	6.0	51.6	16.0	-0.7	14.9	-16.1	28.6	11.2	3.4
Durable goods	8.0	20.6	10.6	10.0	5.7	51.8	12.2	-0.5	11.7	-12.7	23.6	8.3	3.3
Semi-durable goods	7.2	17.4	8.6	8.8	7.8	49.5	22.0	-1.4	20.2	-21.1	33.0	15.0	3.6
Non-durable goods	2.4	13.6	7.8	5.9	1.9	56.4	11.0	0.6	10.4	-11.6	27.8	9.3	3.3
Energy	4.0	77.5	39.7	37.8	0.1	49.9	3.5	-0.1	2.9	-3.0	5.4	1.4	5.5
Services	20.5	15.3	9.0	6.4	0.2	66.8	10.2	1.7	9.5	-12.3	23.2	7.5	3.5
Housing	1.8	21.6	15.4	6.3	0.0	71.2	5.1	2.0	4.9	-5.5		4.1	5.8
Transport	1.3	23.0	20.5	2.5	0.2	82.2	4.2	1.6	3.9	-5.4	20.6	3.0	8.1
Communication	2.6	7.5	4.7	2.9	0.0	53.7	9.6	-1.1	8.6	-11.9		5.6	2.0
Recreation	13.3	16.8	9.3	7.5	0.2	66.5	10.7	1.9	10.0	-12.9	23.3	7.9	3.3
Miscellaneous	2.2	8.0	5.5	2.4	0.0	70.2	6.6	2.2	6.5	-8.1	48.5	6.1	2.8
Food & non-alcoholic beverages	10.8	30.7	15.9	14.8	1.1	52.5	8.3	0.3	8.2	-8.3	25.7	8.1	4.2
Alcoholic beverages & tobacco	2.4	29.3	17.4	11.9	1.8	58.9	7.0	0.4	6.5	-7.5	18.8	6.2	5.6
Clothing & footwear	3.6	23.5	11.2	12.3	14.7	45.1	33.5	-3.3	30.7	-30.1	37.0	20.8	4.3
Housing & energy	3.3	60.5	32.0	28.5	0.2	53.9	6.1	-0.0	4.9	-5.6	24.9	2.9	3.7
Household goods & services	4.2	14.3	7.4	6.9	8.3	52.0	17.8	-0.2	16.9	-18.2	26.4	12.3	2.8
Healthcare	1.5	5.8	3.4	2.4	0.7	56.6	7.2	0.3	6.9	-8.2	22.9	6.6	2.4
Transport	7.0	47.1	25.2	21.9	1.4	55.1	3.5	0.1	3.2	-3.6	9.7	1.8	5.3
Communications	2.8	8.2	4.8	3.4	0.3	54.6	9.7	-0.3	9.5	-10.8	18.0	6.6	2.7
Recreation & culture	7.4	28.3	14.6	13.7	2.0	54.0	12.7	0.1	12.0	-13.4	24.0	10.1	4.1
Education	0.2	10.4	8.9	1.5	0.0	81.2	16.5	7.1	15.4	-20.8	48.5	18.1	4.6
Restaurants & hotels	8.5	10.6	6.1	4.6	0.2	69.0	10.0	2.2	9.2	-12.2	27.4	6.8	2.6
Other goods & services	3.5	12.5	7.1	5.4	1.9	58.1	10.9	0.8	10.2	-11.6	26.8	9.3	3.3
Fully online	3.7	38.7	19.2	19.5	1.7	51.1	12.2	-0.4	11.8	-12.6	20.1	10.0	4.3
Partially online	5.2	21.8	10.6	11.2	14.9	47.1	29.4	-2.4	27.0	-27.4	32.2	18.3	4.0
Offline	46.4	25.2	13.6	11.6	1.2	57.3	8.5	0.7	8.1	-8.9	24.4	6.8	4.0

Notes: Average price-setting moments by sector, COICOP two-digit main group, and mode of price collection, for the Swiss CPI microdata sample from January 2008 to December 2025, including price changes due to temporary sales and product substitutions. Sectors correspond to the COICOP-HICP special aggregates defined by Eurostat. COICOP main groups correspond to COICOP two-digit divisions. The frequency measures are weighted averages of variety-level shares of price changes, increases, decreases, and sales-related price changes, respectively. "Share of increases" is the share of price increases in all non-zero price changes. The size measures are weighted averages of the mean log price change ("Average"), the mean absolute log price change ("Absolute"), the mean size of price increases and decreases, the mean absolute size of sales-related price changes, the standard deviation of absolute log price changes, and the kurtosis of standardized price changes. "Weight" is the average CPI expenditure weight over the sample period, in percent. All moments are first computed at the variety level and then aggregated as a weighted mean across varieties using CPI expenditure weights. Values are reported in percent per month.

Table 4. Pandemic conditions and item-level price-setting moments

	Frequency of price changes			Absolute size of price changes		
	(1)	(2)	(3)	(4)	(5)	(6)
Stringency index	-0.072^{***}		0.023^{***}	0.002		-0.001
	(0.006)		(0.008)	(0.002)		(0.003)
Debit card spending		6.690^{***}	14.532^{***}		-0.774^{***}	-1.058^{***}
		(0.445)	(0.829)		(0.164)	(0.303)
Stringency × Debit card			-0.224^{***}			0.002
			(0.016)			(0.006)
Observations	6,983	9,185	6,930	6,549	8,649	6,502
R^2	0.012	0.001	0.011	0.00001	0.005	0.009

Notes: Panel regressions of item-level price-setting moments on the KOF Stringency Index, sector-specific debit card spending (measured as deviations from January 2020), and their interaction. The interaction term captures how the effect of containment measures varies with sector-specific demand conditions. The dependent variable is the item-level frequency (columns 1–3) or absolute size (columns 4–6) of price changes. All specifications include item fixed effects. Standard errors are reported in parentheses. Statistical significance is indicated by * $p < 0.10$, ** $p < 0.05$, and *** $p < 0.01$.

Table 5. Cross-correlations between inflation and counterfactual inflation rates

	$\hat{\pi}\|_{\Delta p}$	$\hat{\pi}\|_{f}$	$\hat{\pi}\|_{\Delta p^+,\Delta p^-}$	$\hat{\pi}\|_{f^+,f^-}$
$\hat{\pi}$	0.197	0.828	0.791	0.600
Food	0.097	0.881	0.735	0.615
Unprocessed food	0.010	0.952	0.786	0.625
Processed food	0.123	0.861	0.721	0.612
NEIG	0.089	0.849	0.749	0.581
Durable goods	0.138	0.852	0.702	0.537
Semi-durable goods	-0.067	0.860	0.825	0.689
Non-durable goods	0.271	0.792	0.806	0.455
Energy	0.607	0.919	0.940	0.861
Services	0.400	0.824	0.780	0.481
Housing	0.559	0.727	0.743	0.393
Transport	0.395	0.805	0.795	0.367
Communication	0.256	0.862	0.674	0.377
Recreation	0.385	0.767	0.821	0.545
Miscellaneous	0.341	0.921	0.847	0.653
Food & non-alcoholic beverages	0.049	0.919	0.720	0.640
Alcoholic beverages & tobacco	0.227	0.782	0.775	0.548
Clothing & footwear	-0.201	0.909	0.959	0.744
Housing & energy	0.704	0.810	0.861	0.709
Household goods & services	0.079	0.827	0.771	0.489
Healthcare	0.240	0.961	0.855	0.752
Transport	0.145	0.838	0.783	0.534
Communications	0.210	0.863	0.663	0.479
Recreation & culture	0.194	0.816	0.808	0.581
Education	0.757	0.341	0.777	0.244
Restaurants & hotels	0.450	0.740	0.819	0.506
Other goods & services	0.498	0.898	0.853	0.702

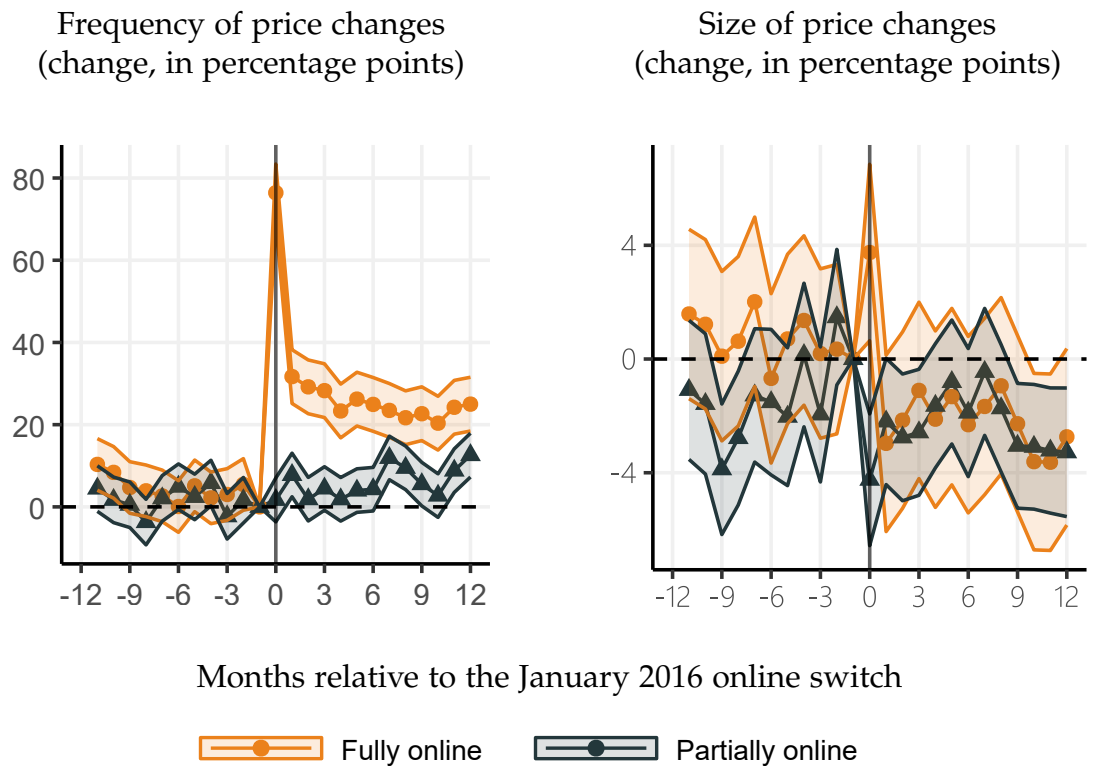
Notes: Cross-correlations between inflation, as in Equation (21), and counterfactual inflation rates as in Equation (19), Equation (20), Equation (22), and Equation (23). The inflation measure $\hat{\pi}_{i,t}$ is defined in Equation (21). Statistics are calculated by expenditure item i and month t and aggregated using CPI expenditure weights across the full sample, by sectors, and by COICOP main groups. Sectors correspond to the COICOP-HICP special aggregates by Eurostat. COICOP main groups correspond to COICOP two-digit divisions. The sample ranges from January 2008 to December 2025 and includes price changes due to temporary sales and product substitutions.

7 FIGURES

Figure 1. Distribution of the frequency and absolute size of price changes across varieties over time

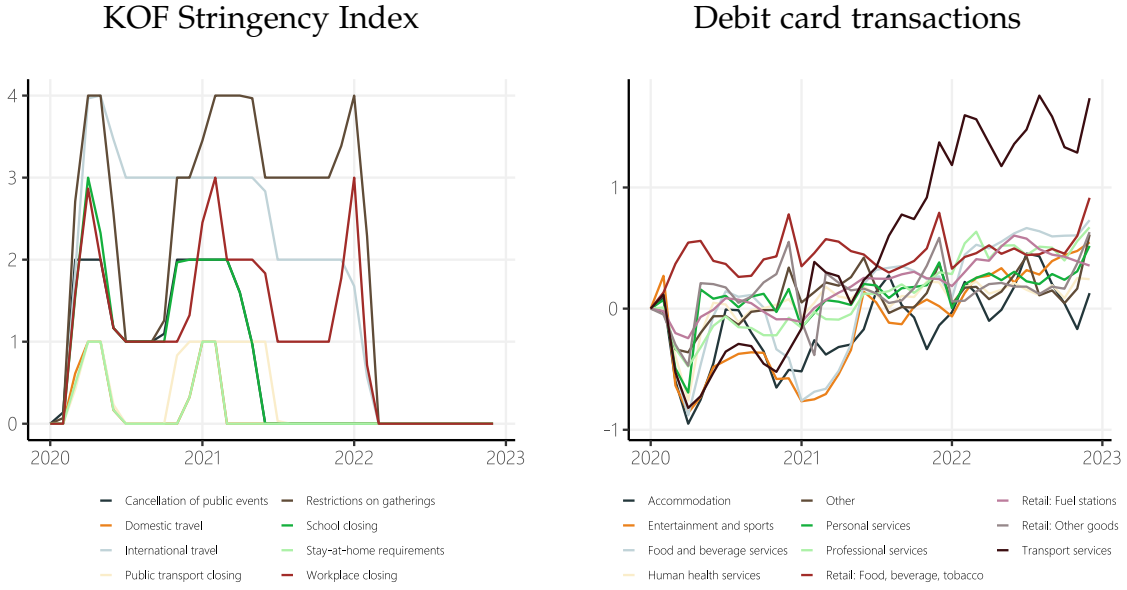
Notes: Distribution of the frequency (top panel) and absolute size of price changes (bottom panel) across varieties in Swiss CPI microdata from January 2008 to December 2025, including price changes due to temporary sales and product substitutions. For each panel, the figure depicts the monthly mean (orange line), median (white line), interquartile range (dark-shaded area), and the 15th–85th percentile range (light-shaded area) across varieties. Values are reported in percent per month.

Figure 2. Event-study estimates of the causal effect of online price collection on price-setting behavior



Notes: Two-way fixed-effects event-study estimates of the causal effect of the transition to online price collection on the frequency (left panel) and absolute size of price changes (right panel). The horizontal axis shows months relative to the January 2016 switch date, with $\ell = -1$ as the omitted reference period. The vertical axis reports the estimated within-item change in percentage points relative to the pre-switch level. Orange markers correspond to items that transition to fully online price collection in January 2016 (consumer electronics); gray markers correspond to items that move to partial online collection—both relative to items that remain exclusively offline throughout the sample. The vertical dashed line marks the switch date. Error bars denote 95% confidence intervals based on standard errors clustered at the item level. All specifications include variety fixed effects and time fixed effects. The estimation window spans ± 12 months around the switch date.

Figure 3. Consumer spending and restrictions during the pandemic

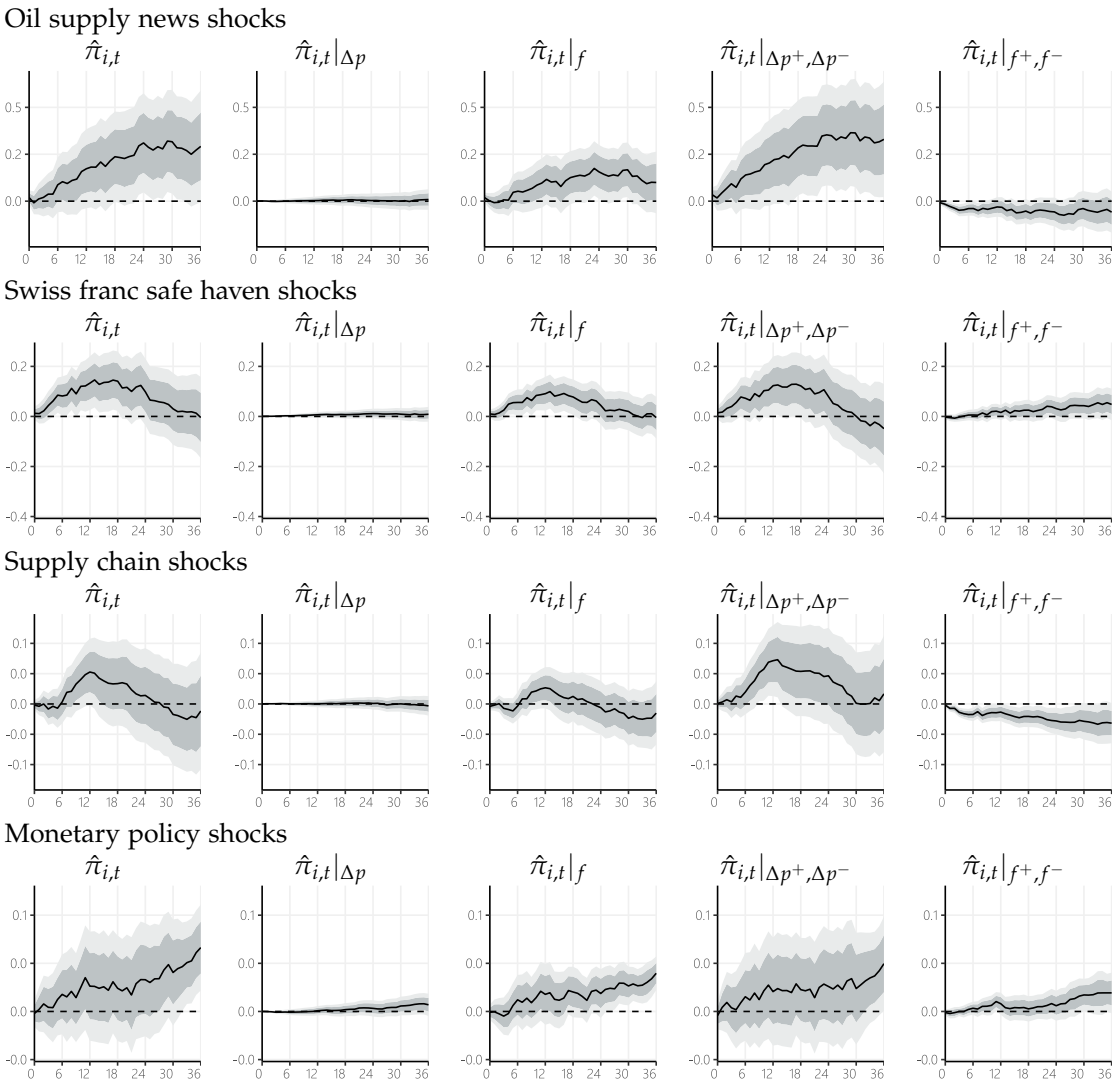


Notes: Left panel: KOF Stringency Index for Switzerland (Pleninger et al., 2022), a continuous composite measure of the severity of non-pharmaceutical containment measures (school closures, workplace closures, restrictions on gatherings, travel controls, and related interventions), scaled from 0 to 100. Right panel: monthly average debit card transaction values by merchant category (Brown et al., 2023), expressed as percentage deviations from the January 2020 level. Transaction values are based on aggregated and anonymized debit card payments conducted in Switzerland. The figure covers January 2020 to December 2022.

Figure 4. Frequency and size of (sales) price changes during the pandemic

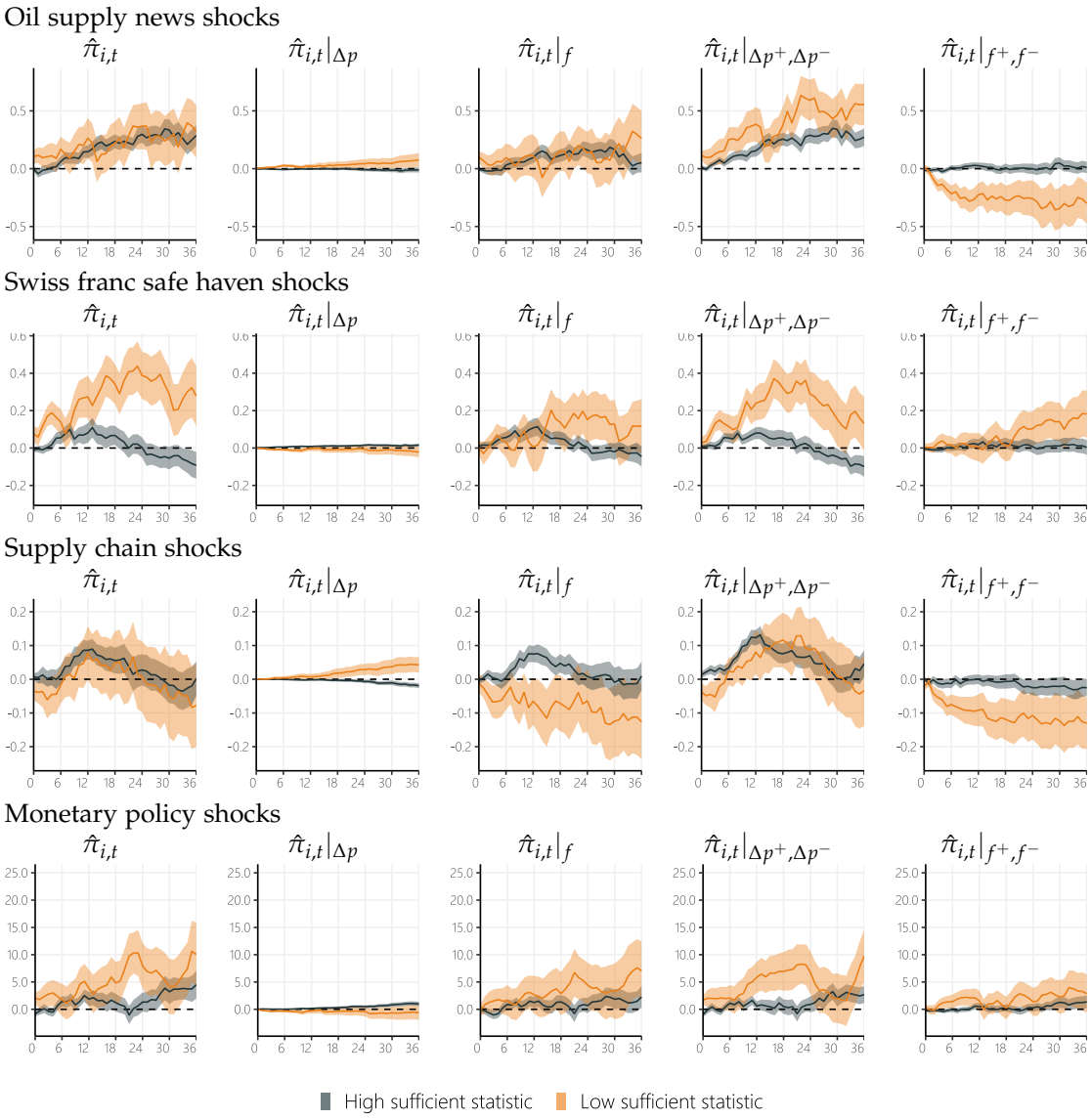
Notes: Frequency (left column) and absolute size (right column) of all price changes (top row) and sales-related price changes (bottom row) from January 2020 to December 2022. Dashed lines show the respective means from January 2018 to December 2019; shaded areas indicate the mean $\pm$ one standard deviation over the same pre-pandemic window. The sample includes temporary sales and product substitutions but excludes COVID price imputations (see Section 2.5). All moments are reported in percent per month.

Figure 5. Conditional responses of recomposed and counterfactual inflation rates to aggregate shocks from linear local projections



Notes: Impulse response functions (solid lines) of recomposed and counterfactual inflation rates to aggregate shocks estimated using panel linear local projections and the sample of CPI microdata from January 2008 to December 2025 that includes price changes due to temporary sales and product substitutions. The models are specified in Equation (2). The rows represent the IRFs to the different shocks: oil supply news, safe haven, supply chain, and monetary policy. The columns correspond to recomposed inflation ($\hat{\pi}_{i,t}$) and counterfactual inflation rates: assuming constant size and frequency of price changes ($\hat{\pi}_{i,t}|_{\Delta p}$ and $\hat{\pi}_{i,t}|_{f}$), and constant sizes and frequencies of price increases and decreases ($\hat{\pi}_{i,t}|_{\Delta p^+,\Delta p^-}$ and $\hat{\pi}_{i,t}|_{f^+,f^-}$). The dark- and light-gray areas are the 68 and 90 percent confidence bands, respectively.

Figure 6. Conditional responses of recomposed and counterfactual inflation rates to aggregate shocks from nonlinear local projections



Notes: Impulse response functions (solid lines) of recomposed and counterfactual inflation rates to aggregate shocks estimated using panel nonlinear local projections and the sample of CPI microdata from January 2008 to December 2025 that includes price changes due to temporary sales and product substitutions. The models are specified in Equation (4). The state variables are the item-level sufficient statistics calculated as in Equation (3). The rows represent the IRFs to the different shocks: oil supply news, safe haven, supply chain, and monetary policy. The columns correspond to recomposed inflation ($\hat{\pi}_{i,t}$) and counterfactual inflation rates: assuming constant size and frequency of price changes ($\hat{\pi}_{i,t}|_{\Delta p}$ and $\hat{\pi}_{i,t}|_{f}$), and constant sizes and frequencies of price increases and decreases ($\hat{\pi}_{i,t}|_{\Delta p^+,\Delta p^-}$ and $\hat{\pi}_{i,t}|_{f^+,f^-}$). The areas are the 68 percent confidence bands.

Online Appendix

Price Setting Before and During the Pandemic: Evidence from Swiss Consumer Prices

Barbara Rudolf Pascal Seiler

September 2026

Abstract

Using microdata underlying the Swiss consumer price index from 2008 to 2025, we document new features of price rigidity and assess their implications for inflation dynamics. The frequency of price changes increased in the decade before the pandemic, driven by items shifting to online price collection, as confirmed by causal identification from an event-study around a collection-mode switch. During the pandemic, the aggregate frequency response was muted, masking large cross-sectional heterogeneity: demand contractions and stricter government interventions each reduced the frequency of adjustments, while demand contractions amplified their size. In response to aggregate shocks, firms adjust mainly the size rather than the frequency of price changes, consistent with time-dependent pricing. However, nonlinear local projections reveal that when price flexibility is high or price selection is strong, firms respond along both margins, monetary non-neutrality falls, and the appropriate macro model switches from time-dependent to state-dependent.

JEL classification: E31, E5, L11

Keywords: Price rigidity, price-setting behavior, consumer prices, inflation, state dependence, COVID-19 pandemic

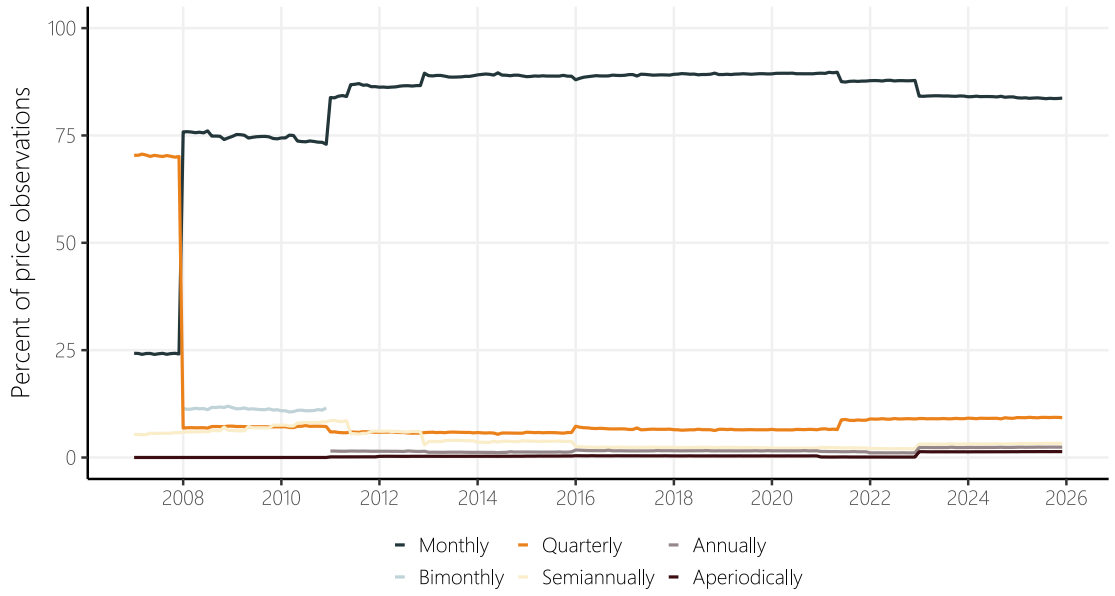
A. DATA

This appendix refers to Section 2 in the main body of the paper and presents additional figures, tables, and analyses that are not featured in the main text.

A.1 *Price collection*

Today, the FSO collects most prices every month. The frequency of price collection changed significantly in January 2008, when the FSO started collecting most quarterly collected prices every month, as shown in Figure A.1.

Figure A.1. Price collection frequency

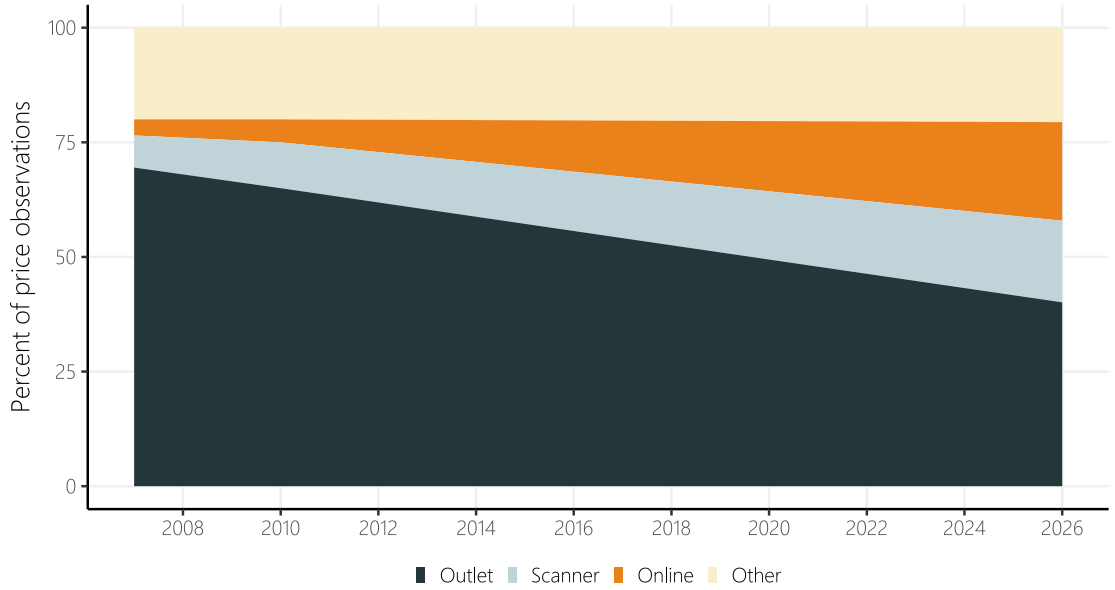


Notes: Percentage of prices collected at each price collection frequency from January 2008 to December 2025.

Traditionally, the FSO has collected most prices directly in the outlets. This practice involves price collectors visiting the stores, finding the products to be collected, and recording their prices. The share of price observations recorded directly in stores has declined substantially over time. Figure A.2 shows the approximate shares of different price collection methods in the total of all price observations.

The FSO introduced scanner data in July 2008 and broadened the range of product categories for which prices are collected as scanner data in April 2010, April 2012,

Figure A.2. Price collection methods

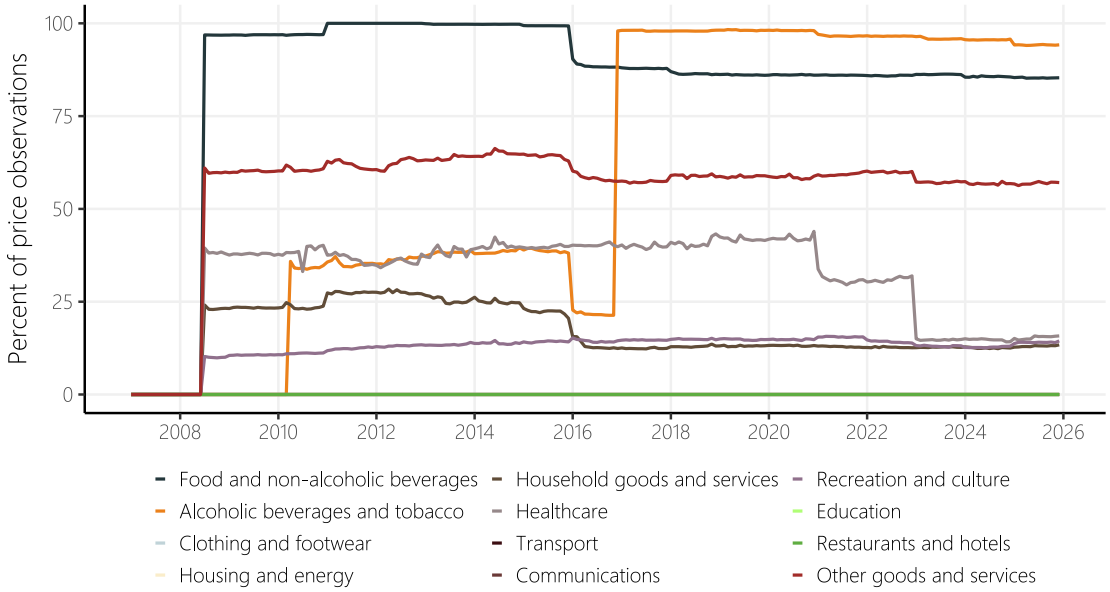


Notes: Percentage of prices collected by each price collection method from January 2008 to December 2025. "Outlet" refers to the share of price quotes collected in stores. "Scanner" refers to prices collected as part of scanner data. "Online" refers to prices collected on the internet. "Other" includes prices collected by other means, such as paper forms, e-mail, telephone, online surveys, or secondary data sources. Sources: FSO (2021).

and December 2016. Figure A.3 shows the percentage of price quotes collected as scanner data for each main group in our sample from January 2008 to December 2025.

In the CPI microdata, online prices are not flagged at the level of individual price quotes or stores. However, some online prices can be identified at the item level. For example, from January 2016 onward, all prices for consumer electronics, package holidays, and air transport have been collected exclusively online (FSO, 2016, 2022). We classify items as "fully online" when all price quotes for that item are obtained exclusively from internet sources (i.e., price collection has completely switched to online). Similarly, we classify items as "partially online" when online price collection complements continued in-store collection (e.g., clothing, footwear, furniture, and furnishings). Table A.1 provides a complete list of fully online and partially online items.

Figure A.3. Scanner collection



Notes: Percentage of price quotes collected as scanner data from January 2008 to December 2025 for each main group.

Table A.1. Expenditure items identified as online prices

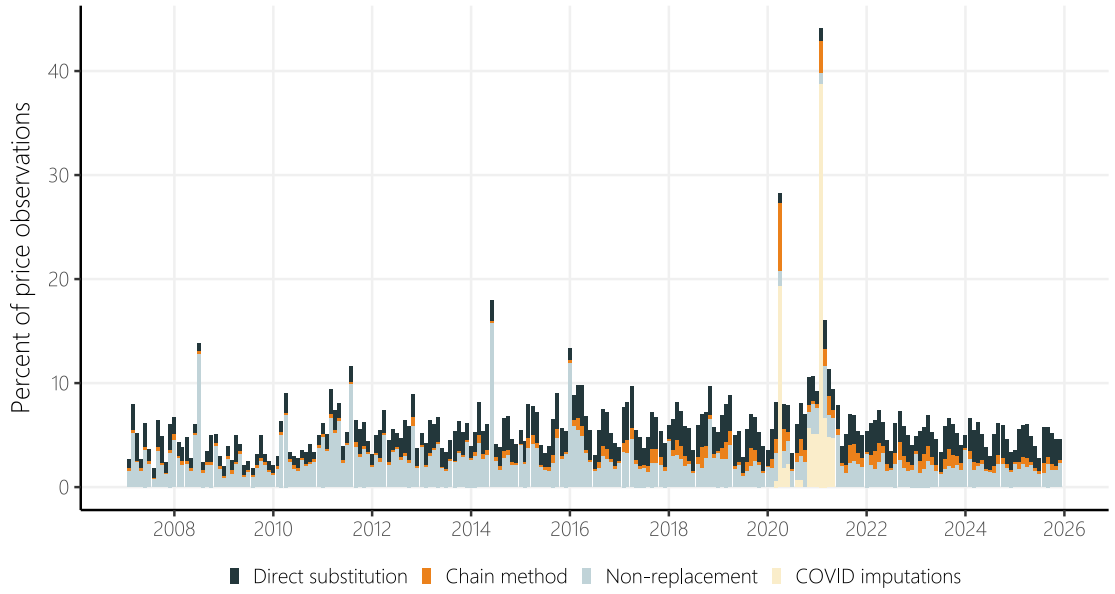
Category	**Items**
Fully online	Garden maintenance, other services relating to the dwelling, consumer electronics (telecommunication equipment; television sets; audiovisual appliances; photographic, cinematographic equipment and optical instruments; IT peripheral devices and accessories; computer software; storage devices and contents; games, toys and hobbies; and game consoles and electronic games) international and domestic package holidays, mountain railways, ski lifts, and social protection services (FSO, 2016, 2022)
Partially online	Items of the product groups clothing, footwear, furniture, and furnishings (FSO, 2016)

Notes: Fully online items account for 4.4% and partially online items for 5.3% of CPI weights, on average. See Section 2.2 for details.

A.2 *Product substitutions and price imputations*

Figure A.4 shows the percentage of substituted products in the monthly collected prices of our sample.

Figure A.4. Product substitutions and COVID price imputations



Notes: Percentage of the most common types of product substitutions from January 2008 to December 2025. "Direct substitution" is used when the old and new products share the same features or are very similar. The new product replaces the previous one, and any price difference is considered fully. The "chain method" applies to products that may have changed but whose primary function is the same. Any price difference between the old and new product is split into a difference in quality and price, but only the price difference is included in calculating the CPI. "Non-replacement" occurs if no other substitution method is applicable. The price spell of the old product is discontinued, and a new price spell is started. No price comparison is made. "COVID imputations" are price imputations during the COVID-19 pandemic.

The COVID-19 pandemic and the measures taken to contain it affected price surveys for the CPI in 2020 and 2021. The FSO could field only a partial price collection in many areas. Therefore, it had to impute many prices. Table A.2 lists the expenditure items whose prices were (fully or partially) imputed each month during the COVID-19 pandemic.

Table A.2. COVID price imputations

Month	Expenditure items	CPI weight
March 2020	Air transport; International package holidays	2.70
April 2020	Jackets for men; Men's suits; Men's trousers; Men's shirts; Men's knitwear; Men's underwear; Women's coats and jackets; Women's skirts and dresses; Women's trousers; Women's blouses; Women's jumpers; Women's underwear; Children's jackets; Children's trousers and skirts; Children's knitwear; Babies' clothing; Children's underwear; Summer/year-round sportswear; Other clothing accessories; Men's footwear; Women's footwear; Children's footwear; Air transport; International package holidays; Meals taken in restaurants and cafes; Wine; Beer; Spirits, other alcoholic drinks; Coffee and tea; Mineral water and soft drinks; Self-service restaurants; Hotels	26.56
May 2020	Air transport; International package holidays; Hotels	4.05
June 2020	Air transport; International package holidays; Hotels	4.05
July 2020	Air transport	0.72
August 2020	Air transport; Sporting events; Admission to sport facilities	0.76
September 2020	Air transport; Sporting events; Admission to sport facilities	0.76
October 2020	Air transport	0.72
November 2020	Air transport; International package holidays; Meals taken in restaurants and cafes; Wine; Beer; Spirits, other alcoholic drinks; Coffee and tea; Mineral water and soft drinks; Self-service restaurants; Fast food meals; Men's and children's hairdressers; Women's hairdressers	18.94
December 2020	Air transport; International package holidays; Meals taken in restaurants and cafes; Wine; Beer; Spirits, other alcoholic drinks; Coffee and tea; Mineral water and soft drinks; Self-service restaurants; Fast food meals	18.38
January 2021	Air transport; International package holidays; Meals taken in restaurants and cafes; Wine; Beer; Spirits, other alcoholic drinks; Coffee and tea; Mineral water and soft drinks; Self-service restaurants; Fast food meals	12.74
February 2021	Air transport; International package holidays; Meals taken in restaurants and cafes; Wine; Beer; Spirits, other alcoholic drinks; Coffee and tea; Mineral water and soft drinks; Self-service restaurants; Fast food meals	12.74
March 2021	Air transport; Sporting events; Cinema; Theatre and concerts; International package holidays; Meals taken in restaurants and cafes; Fast food meals; Wine; Beer; Spirits, other alcoholic drinks; Coffee and tea; Mineral water and soft drinks; Self-service restaurants	13.26
April 2021	Air transport; International package holidays; Meals taken in restaurants and cafes; Fast food meals; Wine; Beer; Spirits, other alcoholic drinks; Coffee and tea; Mineral water and soft drinks; Self-service restaurants	12.89
May 2021	Air transport; International package holidays; Meals taken in restaurants and cafes; Fast food meals; Wine; Beer; Spirits, other alcoholic drinks; Coffee and tea; Mineral water and soft drinks; Self-service restaurants	12.89

Notes: Expenditure items whose prices were (fully or partially) imputed in 2020 and 2021 during the COVID-19 pandemic. Source: Monthly press releases on the Swiss CPI by the FSO.

A.3 *Data treatment and sampling decisions*

Our data sample excludes items whose prices are tracked using auxiliary indices rather than individual price quotes, as well as items with administered or semi-administered prices set by government authorities. Table A.3 lists the excluded index-based items and (semi-)administered price items.

Table A.3. Expenditure items excluded from the analysis

Category	**Items**
Index-based items	Housing rentals; rental of garages, parking spaces; imputed rent for owner-occupied dwellings; medicines; medical services at local surgery; in-patient hospital services; hire of private means of transport; second-hand cars; public transport: direct service; public transport: combined services; air transport; postal services; personal computers; recorded media; recreational boats; games of chance; fiction books; school and educational books; other books; private health insurance
(Semi-)administered prices	Charges for household waste elimination; charges for water provision; charges for sewerage; maintenance and care-taking; gas; electricity; district heating; medicines; medical services at local surgery; dental services; physiotherapy, home care (Spitex); laboratory analyses; in-patient hospital services; out-patient medical services in hospitals; parking fees; taxes for private vehicles and driving school; public transport: direct service; public transport: combined services; taxi; postal services; admission to sport facilities; fees for radio and TV reception; compulsory education; post-compulsory education; higher vocational education and universities; social protection services; household insurance; private health insurance; car insurance

Notes: Index-based items are tracked by auxiliary indices rather than observed price quotes and account for 36.3% of CPI expenditure weights in 2025. Administered and semi-administered prices are set by government authorities and/or centrally collected and account for 25.6% of CPI weights. See Section 2.6 for details.

B. AGGREGATE AND CROSS-SECTIONAL PRICE-SETTING MOMENTS

This appendix refers to Section 3.1 and Section 3.2 in the main body of the paper and presents additional figures, tables, and analyses that are not featured in the main text.

B.1 *Computation and aggregation of price-setting moments*

Price quotes and product definition We observe individual transaction prices, $P_{p,s,t}$, where p indexes a barcode-level product, s an outlet, and t time. Products p are mapped into the COICOP classification, with the most disaggregated level being the variety v, defined as a 10-digit COICOP category. Each product p belongs to a unique variety v (i.e., $p \in v$).

Price changes The (log) price change associated with product p in outlet s between months $t-1$ and t is defined as

$$\Delta p_{p,s,t} = \ln P_{p,s,t} - \ln P_{p,s,t-1}. \tag{6}$$

We define an indicator for a non-zero price change,

$$I_{p,s,t} = \mathbb{1}\left[\Delta p_{p,s,t} \neq 0\right], \tag{7}$$

and analogously indicators for price increases and decreases,

$$I^{+}_{p,s,t} = \mathbb{1}\left[\Delta p_{p,s,t} > 0\right], \qquad I^{-}_{p,s,t} = \mathbb{1}\left[\Delta p_{p,s,t} < 0\right]. \tag{8}$$

Frequency of price changes The frequency of price changes for variety v in month t is defined as the weighted share of price quotes that change relative to the previous month:

$$f_{v,t} = \frac{\sum_{p \in v} \sum_{s} \omega_{p,s,t} I_{p,s,t}}{\sum_{p \in v} \sum_{s} \omega_{p,s,t}}. \tag{9}$$

The weight $\omega_{p,s,t}$ is constructed as the CPI expenditure share of variety v divided

by the number of price quotes collected for that variety in month t. By construction, frequencies aggregate to the CPI weighting scheme within each variety. In practice, CPI weights are updated annually and kept constant within the year.

The frequencies of price increases $f^+_{v,t}$ and decreases $f^-_{v,t}$ are computed analogously by replacing $I_{p,s,t}$ with $I^+_{p,s,t}$ and $I^-_{p,s,t}$, respectively.

Size of price changes The average size of price changes for variety v in month t is defined as the mean of non-zero log price changes:

$$\Delta p_{v,t} = \frac{\sum_{p \in v} \sum_s \omega_{p,s,t} \Delta p_{p,s,t} I_{p,s,t}}{\sum_{p \in v} \sum_s \omega_{p,s,t} I_{p,s,t}}. \tag{10}$$

We also compute the average absolute size of price changes,

$$|\Delta p_{v,t}| = \frac{\sum_{p \in v} \sum_s \omega_{p,s,t} |\Delta p_{p,s,t}| I_{p,s,t}}{\sum_{p \in v} \sum_s \omega_{p,s,t} I_{p,s,t}}, \tag{11}$$

as well as the average size of price increases $\Delta p^+_{v,t}$ and decreases $\Delta p^-_{v,t}$ by conditioning on $I^+_{p,s,t}$ and $I^-_{p,s,t}$, respectively.

Higher-order moments To characterize the distribution of price adjustments beyond first moments, we compute the kurtosis of standardized price changes. Standardization is performed at the finest available cell level, defined as a variety v. For each variety, we compute the mean and standard deviation of non-zero price changes over the sample and define standardized price changes as

$$z_{p,s,t} = \frac{\Delta p_{p,s,t} - \mu_v}{\sigma_v}, \tag{12}$$

where μ_v and σ_v denote the mean and standard deviation of non-zero price changes for variety v. Monthly kurtosis is then computed using the cross-section of standardized price changes observed in month t. This standardization ensures that higher-order moments are not driven by cross-variety heterogeneity in average price change sizes.

Sales-related price-setting moments The dataset contains a sales indicator provided by the FSO which we use to identify sales prices (see Section 2.3). We define

the frequency of sales price changes as the share of price quotes flagged as sales whose price differs from the previous month. The size of sales is measured as the average absolute log difference between the sales price and the corresponding regular (non-sale) price. All sales-related moments are computed using the same weighting scheme $\omega_{p,s,t}$ as for regular prices.

Treatment of sales and regular prices In the baseline analysis, all statistics are computed using observed transaction prices, including temporary sales. When excluding temporary sales, we use the FSO sales flag to define a regular price recursively as

$$P^{\text{reg}}_{p,s,t} = \begin{cases} P_{p,s,t}, & \text{if } P_{p,s,t} \text{ not on sale,} \\ P^{\text{reg}}_{p,s,t-1}, & \text{if } P_{p,s,t} \text{ on sale,} \end{cases} \tag{13}$$

and recompute all frequency and size moments by replacing $P_{p,s,t}$ with $P^{\text{reg}}_{p,s,t}$, thus eliminating price changes due to temporary sales. Additional robustness checks based on alternative sales filters—the symmetric V-shaped filter of Nakamura and Steinsson (2008) and the running mode filter of Kehoe and Midrigan (2015)—are discussed in Online Appendix B.3.

Aggregation Aggregate price-setting moments are constructed as CPI-weighted means or medians of variety-level statistics. Let $x_{v,t}$ denote a price-setting moment computed at the variety level v in month t (e.g., the frequency of price changes), and let w_v denote the CPI expenditure weight of variety v. In the case of a weighted mean, the aggregate moment x_t is defined as

$$x_t = \sum_v w_v \, x_{v,t}. \tag{14}$$

Weighted medians are computed similarly by ordering varieties according to $x_{v,t}$ and using CPI expenditure weights to determine the median.

Aggregate moments are not only reported for the full CPI basket but also for a range of subaggregates. Sectoral subaggregates are constructed by grouping varieties into mutually exclusive sectors based on their COICOP classification. In particular, we follow the COICOP-HICP special aggregates defined by Eurostat. The food sector includes alcohol and tobacco; industrial goods exclude energy

goods; and services correspond to the overall index excluding goods (i.e., food, industrial goods, and energy). Services related to recreation also include repair and personal care services.

In addition, we report statistics for the twelve main COICOP divisions at the two-digit level. More granular subaggregates, reported in Table B.13 in Online Appendix B.6, are constructed at the five-digit COICOP subclass (expenditure item) level.

We further distinguish between online and offline price quotes and report moments separately for prices collected fully online, partially online, and exclusively offline. We identify online prices as described in Section 2.2. Table A.1 in Online Appendix A.1 provides a complete list of fully online and partially online items.

Regional subaggregates are constructed at the NUTS-2 level. Switzerland is divided into seven NUTS-2 regions, following the Nomenclature of Territorial Units for Statistics (NUTS), a standardized geocode system used for statistical purposes in Europe. Aggregate moments at the regional level are computed using CPI-weighted averages of variety-level statistics within each region.

B.2 *The distribution of price changes*

Table B.1 summarizes various statistics on the distribution of non-zero price changes including temporary sales and product substitutions. Table B.2 provides the corresponding set of results for the sample excluding sales.

Table B.1. Distribution of the size of price adjustments

	Size of price adjustments				
	Average Changes Δp	Absolute Changes $\lvert\Delta p\rvert$	Increases Δp^+	Decreases Δp^-	Standardized Changes z
Mean	0.1	7.4	6.8	-8.1	0.7
10th percentile	-10.5	0.4	0.5	-35.7	0.1
25th percentile	-2.6	1.1	2.0	-20.8	0.2
50th percentile	0.2	2.8	6.9	-8.3	0.5
75th percentile	3.0	7.7	17.6	-2.1	1.0
90th percentile	10.2	21.1	35.5	-0.4	1.6
Standard deviation	20.3	16.0	16.2	15.8	0.7
Skewness	0.2				0.0
Kurtosis	8.8				5.2

Notes: The sample ranges from January 2008 to December 2025 and includes price changes due to temporary sales and product substitutions. The sizes of average price "changes," "absolute" price changes, price "increases," "decreases," and "standardized" price changes refer to the weighted averages of the average size of price changes, the absolute size of price changes, size of price increases, size of price decreases, and size of standardized price changes, respectively. The mean size of average price changes is calculated by first computing the average size of price changes for each variety and then taking a weighted mean across all varieties using CPI expenditure weights. Statistics of other moments are calculated analogously. Values are reported in percent per month.

Table B.2. Distribution of the size of price adjustments based on the sample excluding temporary sales

	Size of price adjustments				
	Average Changes Δp	Absolute Changes $\lvert\Delta p\rvert$	Increases Δp^+	Decreases Δp^-	Standardized Changes z
Mean	0.2	5.9	5.4	-6.4	0.7
10th percentile	-8.0	0.3	0.4	-23.6	0.1
25th percentile	-2.3	1.1	1.4	-13.5	0.2
50th percentile	0.2	2.6	4.9	-5.8	0.5
75th percentile	2.8	6.4	11.8	-1.5	1.0
90th percentile	8.3	15.4	21.9	-0.4	1.6
Standard deviation	14.4	11.4	11.4	11.5	0.7
Skewness	0.2				-0.0
Kurtosis	13.6				5.6

Notes: The sample ranges from January 2008 to December 2025 and includes price changes due to product substitutions but excludes price changes due to temporary sales. The sizes of average price "changes," "absolute" price changes, price "increases," "decreases," and "standardized" price changes refer to the weighted averages of the average size of price changes, the absolute size of price changes, size of price increases, size of price decreases, and size of standardized price changes, respectively. The mean size of average price changes is calculated by first computing the average size of price changes for each variety and then taking a weighted mean across all varieties using CPI expenditure weights. Statistics of other moments are calculated analogously. Values are reported in percent per month.

B.3 *Alternative sale filters*

In the main text, we rely on the sales flags provided by the FSO to identify temporary sales. In this appendix, we assess the robustness of our sales-filtered results by employing two alternative sale filters to identify and remove temporary sales from our data. For one, we employ a symmetric V-shaped sale filter proposed by Nakamura and Steinsson (2008), which aims at removing price patterns in which the price returns to the same price within 1 or 3 months. If the price does not return to the original price within the chosen window, we consider the price change a regular price change. In addition, we create monthly reference prices as 3-month running modal prices, which we iteratively update to align the

reference-price change with the actual price change as in Kehoe and Midrigan (2015).

Table B.3 and Table B.4 present the frequency and size of price adjustments, respectively, for the two versions of the symmetric V-shaped sale filter and the running mode filter.

Table B.3. Frequency of price adjustments, alternative sale filters

	Frequency of price adjustments			
	Changes f	Increases f^+	Decreases f^-	Share Increases
V-shaped filter (1-month window)				
Mean	24.7	13.2	11.5	56.4
Median	13.3	5.6	4.2	
Std. dev.	28.6	19.6	18.6	
V-shaped filter (3-month window)				
Mean	20.1	11.2	8.9	58.4
Median	9.2	4.3	2.7	
Std. dev.	25.8	18.0	16.0	
Running mode filter (3-month window)				
Mean	18.9	10.1	8.8	55.9
Median	5.9	2.4	1.3	
Std. dev.	27.5	18.3	17.0	

Notes: The sample ranges from January 2008 to December 2025 and includes price changes due to product substitutions. The V-shaped filter removes symmetric V-shaped price changes, following the algorithm of Nakamura and Steinsson (2008). We consider 1-month and 3-month windows. The running mode filter removes price changes following the algorithm of Kehoe and Midrigan (2015). The frequencies of price "changes," "increases," and "decreases" refer to the weighted averages of the shares of price changes, increases, and decreases, respectively. The mean frequency of price changes is calculated by first computing the frequency of price changes for each variety and then taking a weighted mean across all varieties using CPI expenditure weights. Median statistics and statistics of standard deviations are calculated analogously. "Share of increases" refers to the share of price increases in all price changes. Values are reported in percent per month.

Table B.4. Size of price adjustments, alternative sale filters

	Size of price adjustments			
	Average Changes Δp	Absolute Changes $\lvert\Delta p\rvert$	Increases Δp^+	Decreases Δp^-
V-shaped filter (1-month window)				
Mean	0.3	10.5	9.8	-11.0
Median	0.6	7.3	6.5	-7.6
Std. dev.	11.1	10.4	10.5	11.1
V-shaped filter (3-month window)				
Mean	0.3	10.3	9.5	-10.9
Median	0.7	7.2	6.3	-7.6
Std. dev.	11.0	10.1	10.2	11.0
Running mode filter (3-month window)				
Mean	0.4	8.0	7.6	-8.2
Median	0.5	5.5	5.1	-5.5
Std. dev.	8.3	8.0	8.2	8.4

Notes: The sample ranges from January 2008 to December 2025 and includes price changes due to product substitutions. The V-shaped filter removes symmetric V-shaped price changes, following the algorithm of Nakamura and Steinsson (2008). We consider 1-month and 3-month windows. The running mode filter removes price changes following the algorithm of Kehoe and Midrigan (2015). The sizes of "absolute" price changes, price "increases," and "decreases" refer to the weighted averages of the absolute size of price changes, size of price increases, and absolute size of price decreases, respectively. The mean size of average price changes is calculated by first computing the average size of price changes for each variety and then taking a weighted mean across all varieties using CPI expenditure weights. Median statistics and statistics of standard deviations are calculated analogously. Values are reported in percent per month.

B.4 *Comparison with evidence on price setting in the United States*

This section provides more details on the methodology and the results of comparing of our findings on price rigidity in Switzerland with evidence for the United States provided by Nakamura and Steinsson (2008) for the period 1998–2005.

To secure a consistent comparison and control for possible differences in the composition of the consumption baskets, we perform the comparison based on a restricted sample of products represented in both countries. Furthermore, we

use US CPI expenditure weights to calculate the aggregate statistics for both economies. We start from the disaggregated results on the frequency and size of price changes that are part of the supplementary material by Nakamura and Steinsson (2010). These results are available from 1998 to 2005 based on samples including and excluding temporary sales (product substitutions are excluded in both samples). To determine the sample of comparable products, we create a correspondence table between the Entry Level Items (ELIs) classification of the US CPI and the COICOP classification of the Swiss CPI (we map ELIs into COICOP at the five-digit level).

We exclude 16 ELIs (accounting for 3.1 percent of the US consumption basket), for which we do not find an appropriate correspondence in the five-digit COICOP categories. These ELIs are dogs (RB012), automobile service clubs (TF032), housing at school, excluding board (HB011), replacement of setting for women's rings (GD043), calculators and adding machines (EE042), gardening or lawn care services (HP021), reupholstery of furniture (HP042), Spanish/Mexican foods (FT062), rental of video tapes and discs (RA042), peanut butter (FS031), moving, storage, freight express (HP031), appliance repair (HP041), motor oil (TC022), alternative automotive fuels (TB022), vehicle leasing (TA031) and automobile rental (TA041).

Furthermore, we exclude 5 five-digit COICOP categories (accounting for 8.2 percent of the US consumption basket) for which underlying prices are collected using a different method in one country (e.g., as a unit value index or administered prices) than in the other. These COICOP categories are electricity (04.5.1), gas (04.5.2), other health-related incurred costs (06.6.1), recording media (09.1.4), and books (09.5.1).

Table B.5 and the upper panels of Figure B.1 present the comparison results for the frequency of price changes. Results are given for the mean and median frequencies of price changes and samples including and excluding temporary sales. Price changes due to product substitutions are excluded in all samples. The corresponding results for the absolute size of price changes are presented in Table B.6 and in the lower panels of Figure B.1.

Table B.5. Frequency of price adjustments: Switzerland versus United States

	Including sales				Excluding sales			
	Mean		Median		Mean		Median	
	CH	US	CH	US	CH	US	CH	US
Total	23.1	25.8	15.1	20.4	21.5	20.2	9.6	8.4
Food	29.7	31.3	28.1	32.9	28.4	17.7	26.9	13.1
NEIG	22.0	28.6	15.9	25.9	17.5	17.7	6.1	6.4
Energy	84.2	85.4	84.5	87.6	84.0	85.4	84.3	87.6
Services	14.1	15.2	6.1	7.8	14.0	14.9	5.9	7.8

Notes: Mean and median frequencies of price adjustments in percent per month for Switzerland and the United States. The results for Switzerland are based on the period from January 2008 to December 2025. The results for the US are taken from Nakamura and Steinsson (2010) and calculated for the period 1998–2005. To control for possible differences in the composition of the consumption basket across economic areas, the comparison uses the same equivalent products and US CPI expenditure weights to calculate the aggregate statistics. Both samples exclude price changes due to product substitutions. Temporary sales are excluded using sales flags by the respective national statistical offices.

Table B.6. Absolute size of price adjustments: Switzerland versus United States

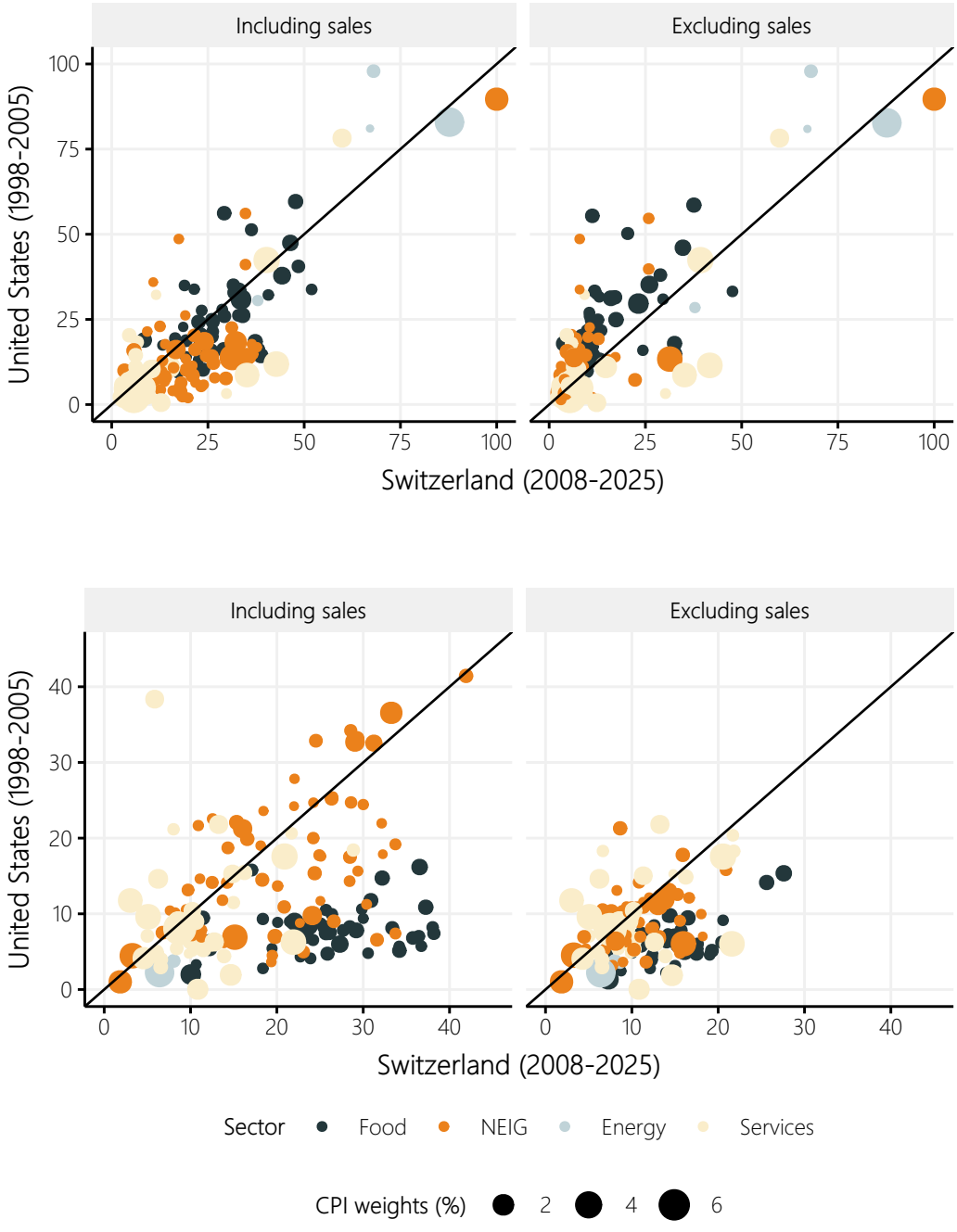
	Including sales						Excluding sales					
	Changes		Increases		Decreases		Changes		Increases		Decreases	
	CH	US	CH	US	CH	US	CH	US	CH	US	CH	US
Total	10.4	15.3	9.7	14.2	10.7	17.3	8.0	10.7	7.5	10.1	8.5	12.5
Food	7.5	24.8	7.3	23.4	7.6	26.6	6.3	13.7	6.1	12.6	6.2	16.0
NEIG	14.9	18.4	13.4	16.6	15.1	19.7	7.5	9.7	7.0	9.3	8.0	10.7
Energy	2.3	6.6	2.0	7.0	2.1	6.0	2.3	6.6	1.9	7.0	2.0	6.0
Services	9.7	11.1	9.4	10.4	10.2	13.7	9.7	10.6	9.1	10.0	10.4	13.0

Notes: Average absolute size of price changes, increases, and absolute decreases in percent per month for Switzerland and the United States. The results for Switzerland are based on the period from January 2008 to December 2025. The results for the US are taken from Nakamura and Steinsson (2010) and calculated for the period 1998–2005. To control for possible differences in the composition of the consumption basket across economic areas, the comparison uses the same equivalent products and US CPI expenditure weights to calculate the aggregate statistics. Both samples exclude price changes due to product substitutions. Temporary sales are excluded using sales flags by the respective national statistical offices.

For the sample including sales, we find that prices are on average more flexible in the United States than in Switzerland. The average frequency of price adjustments is 25.8 percent in the US, whereas it is 23.1 percent for comparable goods and services in Switzerland (see Table B.5). However, when we exclude temporary sales, the frequencies of price changes are approximately the same in both countries: 20.2 percent in the US and 21.5 percent in Switzerland. The same pattern applies to the median frequencies of price changes. Examining the sectoral differences, we observe that the median frequency of food price changes is significantly higher in Switzerland than in the US (+14 percentage points excluding temporary sales). This difference could partly be because in Switzerland, the prices of most food items have been collected as scanner data since 2008, which leads to more frequent price changes (Cavallo, 2018b). In all other sectors, the median price adjustment frequency in the US exceeds that in Switzerland by 2 to 3 percentage points.

Turning to the size of price changes, we find that price changes in the US are, on average, significantly larger than in Switzerland. For the sample including

Figure B.1. Frequency and size of price changes: Switzerland versus the United States



Notes: Frequency (upper panels) and size of price changes (lower panels) for the samples including and excluding temporary sales for Switzerland and the United States. The results for Switzerland are based on the period from January 2008 to December 2025. The results for the US are taken from Nakamura and Steinsson (2010) and calculated for the period 1998–2005. To control for possible differences in the composition of the consumption basket across economic areas, the comparison uses the same equivalent products and US CPI expenditure weights to calculate the aggregate statistics. Both samples exclude price changes due to product substitutions. Temporary sales are excluded using sales flags by the respective national statistical offices. All moments are depicted in percent.

temporary sales, the average absolute price change is 15.3 percent in the US and 10.4 percent in Switzerland (see Table B.6). When we exclude price changes due to temporary sales, we find that the size of price changes in both countries is slightly closer: 10.7 percent in the United States versus 8.0 percent in Switzerland. Price changes in the food and energy sector are more than twice as large in the US than in Switzerland. For food items, this could again be related to the use of scanner data, which are usually associated with smaller price changes (Cavallo, 2018b). For NEIG and services, the size of price changes in the US exceeds that in Switzerland by approximately 2 percentage points.

B.5 *Comparison with evidence on price setting in the euro area*

This section provides more details on the methodology and the results of comparing our findings on price rigidity in Switzerland with evidence for the euro area provided by Gautier et al. (2024).

Gautier et al. (2024) use CPI microdata from eleven euro area countries and build a harmonized sample of 166 common products at the five-digit COICOP level. The 166 common products are items for which data are available in at least three of the four largest euro area countries (Germany, France, Italy, and Spain). They calculate results on the frequency and size of price changes over the common period from 2011 to 2017 across all countries, except for Belgium (2011–2015) and Latvia (2017).

Gautier et al. (2024) do not publish disaggregated results on the frequency and size of price changes. Therefore, we restrict our sample to 155 of the 166 common products, which are also represented in our Swiss data.[40] The 11 five-digit COICOP categories missing from the Swiss data account for only 1.8 percent of the 166 common products in the euro area by expenditure weight, which leaves our comparison broadly representative. The sample of products represented in both economic areas covers 53.1 percent of the 2025 Swiss CPI basket. We further restrict the sample period to 2011–2017 to compare moments of price rigidity on a common period in all euro area countries (except Belgium: 2011–2015; Latvia: 2017) and Switzerland. Furthermore, we use the same euro area HICP weights averaged over 2017–2020 to aggregate our five-digit COICOP-level results for Switzerland.

The 11 COICOP categories missing in our data for Switzerland are fresh or chilled

seafood (01.1.3.3), frozen seafood (01.1.3.4), other preserved or processed fish and seafood-based preparations (01.1.3.6), milk, preserved (01.1.4.3), repair of furniture, furnishings and floor coverings (05.1.3.0), repair of household appliances (05.3.3.0), thermal-baths, corrective-gymnastic therapy, ambulance services and hire of therapeutic equipment (06.2.3.2), lubricants (07.2.2.4), removal and storage services (07.3.6.2), museums, libraries, zoological gardens (09.4.2.2), and accommodation services of other establishments (11.2.0.3).

Table B.7 presents the comparison results for the frequency of price changes. Results are given for the mean and median frequencies of price changes and for samples including and excluding temporary sales. Price changes due to product substitutions are excluded in all samples. The corresponding results for the size of price changes are presented in Table B.8.

Table B.7. Frequency of price adjustments: Switzerland versus euro area

	Including sales				Excluding sales			
	Mean		Median		Mean		Median	
	CH	EA	CH	EA	CH	EA	CH	EA
Total	15.2	11.9	12.8	9.6	12.9	8.3	7.4	5.7
Processed food	48.4	31.1	50.4	29.3	46.9	23.4	49.3	20.2
Unprocessed food	21.4	14.9	21.6	14.4	20.2	10.2	19.9	8.5
NEIG	12.6	12.4	14.5	12.0	6.5	6.3	3.3	5.1
Services	7.1	5.6	4.3	3.2	7.0	5.4	4.1	3.0

Notes: Mean and median frequencies of price adjustments in percent per month for Switzerland and the euro area. The results for the euro area are taken from Gautier et al. (2024) and calculated for the period 2011–2017 (Belgium: 2011–2015; Latvia: 2017) using a harmonized sample of 166 common products. The results for Switzerland are based on the same period and 155 of the 166 common products, representing 98.2% of their expenditure. Results for both economic areas use euro area HICP weights averaged over the period 2017–2020 to aggregate five-digit COICOP-level results to control for possible differences in consumption patterns. Both samples exclude price changes due to product substitutions. Temporary sales are excluded using sales flags by the respective national statistical offices.

Table B.8. Absolute size of price adjustments: Switzerland versus euro area

	Including sales				Excluding sales			
	Increases		Decreases		Increases		Decreases	
	CH	EA	CH	EA	CH	EA	CH	EA
Total	11.8	9.0	12.9	12.0	7.9	6.4	9.3	8.0
Processed food	9.8	12.3	9.7	14.5	8.8	10.0	8.6	10.6
Unprocessed food	6.9	8.3	7.2	10.4	5.3	5.7	5.6	6.1
NEIG	20.2	13.5	21.1	18.4	9.2	7.8	11.9	10.2
Services	8.1	5.0	9.9	6.5	7.9	5.0	9.5	6.2

Notes: Median size of price increases and absolute price decreases in percent per month for Switzerland and the euro area. The results for the euro area are taken from Gautier et al. (2024) and calculated for the period 2011–2017 (Belgium: 2011–2015; Latvia: 2017) using a harmonized sample of 166 common products. The results for Switzerland are based on the same period and 155 of the 166 common products, representing 98.2% of their expenditure. Results for both economic areas use euro area HICP weights averaged over the period 2017–2020 to aggregate five-digit COICOP-level results to control for possible differences in consumption patterns. Both samples exclude price changes due to product substitutions. Temporary sales are excluded using sales flags by the respective national statistical offices.

The comparison shows that prices are more flexible in Switzerland than in the euro area. The average frequency of price adjustments including temporary sales is 15.2 percent in Switzerland, whereas it is 11.9 percent in the euro area (see Table B.7). The results for Switzerland are comparable to those for Latvia (15.9 percent), Lithuania (13.3 percent), and Greece (12.7 percent), the countries for which Gautier et al. (2024) find the highest frequencies of price changes in the euro area. When temporary sales are excluded, the respective adjustment frequencies are 12.9 percent for Switzerland and 8.3 percent for the euro area. These findings also apply to the median frequencies of price changes.

Furthermore, while we observe a considerable increase in the frequency of price changes from 2008 to 2019 in Switzerland, the results for the euro area do not show any strong upward trend over the period from 2005 to 2019.

With respect to the size of price changes, we find that price changes in Switzerland

are, on average, slightly larger than those in the euro area. For the sample including temporary sales, the median absolute size of price increases (decreases) is 11.8 percent (12.9 percent) in Switzerland, compared to 9.0 percent (12.0 percent) in the euro area (see Table B.8). When we exclude price changes due to temporary sales, the difference is smaller for price increases (7.9 percent in Switzerland versus 6.4 percent in the euro area) but larger for absolute price decreases (9.3 percent versus 8.0 percent). Examining the sectoral differences, we note that while price changes for NEIG and services are larger in Switzerland, price changes for food are larger in the euro area.

B.6 *Cross-sectional heterogeneity in the frequency and size of price changes*

Table B.9 summarizes median price-setting moments using the sample including price changes due to temporary sales and product substitutions.

Table B.9. Cross-sectional price-setting moments - median moments

		Frequency of price adjustments					Size of price adjustments						
	Weight	Changes	Increases	Decreases	Sales	Share of Increases	Absolute Changes	Average Changes	Increases	Decreases	Sales	Std. dev.	Kurtosis
		f	f^+	f^-	f^s	$\frac{f^+}{f}$	$\lvert\Delta p\rvert$	Δp	Δp^+	Δp^-	$\lvert\Delta p^s\rvert$	sd($\lvert\Delta p\rvert$)	Kur(z)
Food	13.2	27.8	13.3	11.1	0.0	53.3	6.7	0.3	6.1	-6.3	22.7	7.1	3.3
Unprocessed food	3.5	43.8	20.5	20.0	0.0	50.0	8.4	0.1	8.1	-8.2	26.2	8.9	4.3
Processed food	9.7	22.6	11.3	9.1	0.0	54.5	6.0	0.3	5.3	-5.4	22.3	6.3	3.0
NEIG	17.6	13.6	5.6	5.4	1.3	50.0	12.2	0.1	10.6	-12.6	26.0	9.4	2.5
Durable goods	8.0	15.4	6.1	5.3	0.0	50.0	9.5	0.0	8.1	-9.8	22.3	6.6	2.5
Semi-durable goods	7.2	13.5	5.3	6.1	3.7	50.0	19.0	-0.0	15.4	-18.3	32.4	13.9	2.5
Non-durable goods	2.4	11.2	5.7	4.2	0.0	55.6	8.4	0.6	7.6	-8.8	24.4	7.8	2.4
Energy	4.0	95.9	37.2	26.6	0.0	50.0	2.6	-0.0	2.0	-2.0	4.0	1.0	3.5
Services	20.5	3.1	2.0	0.0	0.0	71.4	8.2	2.4	7.4	-10.2	22.3	6.0	2.3
Housing	1.8	16.7	10.0	2.2	0.0	73.8	4.2	1.8	3.9	-4.7		3.7	4.5
Transport	1.3	7.1	6.6	0.0	0.0	97.3	2.7	1.2	2.3	-2.9	21.7	1.7	2.3
Communication	2.6	0.0	0.0	0.0	0.0	66.7	6.2	0.2	4.7	-8.2		2.4	1.5
Recreation	13.3	4.0	2.8	0.0	0.0	69.2	8.7	2.7	7.9	-10.9	22.3	6.6	2.4
Miscellaneous	2.2	0.0	0.0	0.0	0.0	100.0	3.3	1.2	3.5	-2.5	68.1	2.1	1.9
Food & non-alcoholic beverages	10.8	27.6	13.0	11.5	0.0	50.0	6.9	0.2	6.5	-6.5	23.6	7.4	3.2
Alcoholic beverages & tobacco	2.4	28.5	15.6	9.6	0.7	58.3	4.3	0.4	3.6	-4.6	18.4	4.1	4.0
Clothing & footwear	3.6	19.5	6.4	9.3	9.1	48.9	33.5	-1.5	30.0	-28.9	36.1	21.3	3.0
Housing & energy	3.3	94.3	11.1	6.4	0.0	52.0	4.3	0.5	3.4	-3.6	22.4	1.9	2.4
Household goods & services	4.2	13.3	6.2	5.7	5.6	50.0	16.9	0.1	15.3	-17.1	23.2	11.6	2.2
Healthcare	1.5	0.0	0.0	0.0	0.0	52.8	4.6	0.2	4.2	-5.2	21.6	4.6	1.8
Transport	7.0	44.4	9.1	5.7	0.0	59.1	2.3	0.3	2.0	-2.1	5.5	1.0	3.2
Communications	2.8	0.0	0.0	0.0	0.0	51.0	7.3	0.3	6.1	-8.2	16.1	5.3	2.0
Recreation & culture	7.4	17.2	8.1	6.8	0.0	52.2	10.5	0.4	9.4	-11.4	22.3	8.9	3.2
Education	0.2	0.0	0.0	0.0	0.0	83.9	13.0	5.2	12.3	-14.1	68.1	12.8	3.7
Restaurants & hotels	8.5	3.1	2.1	0.0	0.0	78.0	8.2	3.2	7.4	-10.2	24.5	5.4	1.8
Other goods & services	3.5	10.0	4.9	2.9	0.0	58.3	8.9	1.0	7.8	-9.3	22.7	8.2	2.4
Fully online	3.7	33.3	14.6	14.6	0.0	50.0	10.4	-0.1	9.3	-11.0	18.2	9.2	3.4
Partially online	5.2	19.4	7.4	9.1	11.5	50.0	27.5	-0.9	23.7	-24.8	30.4	18.2	2.9
Offline	46.4	14.3	6.0	4.1	0.0	57.1	6.5	0.7	5.7	-6.3	22.6	5.4	2.8

Notes: Median price-setting moments by sector, COICOP two-digit main group, and mode of price collection, for the Swiss CPI microdata sample from January 2008 to December 2025, including price changes due to temporary sales and product substitutions. Sectors correspond to the COICOP-HICP special aggregates defined by Eurostat. COICOP main groups correspond to COICOP two-digit divisions. The frequency measures are weighted averages of variety-level shares of price changes, increases, decreases, and sales-related price changes, respectively. "Share of increases" is the share of price increases in all non-zero price changes. The size measures are weighted averages of the mean log price change ("Average"), the mean absolute log price change ("Absolute"), the mean size of price increases and decreases, the mean absolute size of sales-related price changes, the standard deviation of absolute log price changes, and the kurtosis of standardized price changes. "Weight" is the average CPI expenditure weight over the sample period, in percent. All moments are first computed at the variety level and then aggregated as a weighted median across varieties using CPI expenditure weights. Values are reported in percent per month.

Table B.10 summarizes average price-setting moments using the sample excluding price changes due to temporary sales but including price changes due to product substitutions.

Table B.10. Cross-sectional price-setting moments - excluding sales, including substitutions

		Frequency of price adjustments					Size of price adjustments						
	Weight	Changes	Increases	Decreases	Sales	Share of Increases	Absolute Changes	Average Changes	Increases	Decreases	Sales	Std. dev.	Kurtosis
		f	f^+	f^-	f^s	$\frac{f^+}{f}$	$\lvert\Delta p\rvert$	Δp	Δp^+	Δp^-	$\lvert\Delta p^s\rvert$	sd($\lvert\Delta p\rvert$)	Kur(z)
Food	13.2	29.1	15.5	13.6		53.9	6.8	0.3	6.6	-6.8		6.4	4.3
Unprocessed food	3.5	44.1	22.2	21.9		50.9	9.5	0.1	9.2	-9.0		8.2	5.0
Processed food	9.7	24.0	13.2	10.8		54.9	5.9	0.4	5.7	-6.0		5.8	4.0
NEIG	17.6	13.9	7.4	6.6		53.8	9.1	0.1	8.7	-9.5		6.8	3.0
Durable goods	8.0	17.0	8.9	8.1		53.4	7.4	-0.2	6.9	-7.8		5.2	3.0
Semi-durable goods	7.2	10.5	5.5	5.0		53.0	11.3	0.1	10.9	-11.9		8.6	3.0
Non-durable goods	2.4	12.1	7.1	5.1		57.1	8.1	0.7	7.7	-8.5		6.8	3.0
Energy	4.0	77.3	39.6	37.7		49.9	3.5	-0.1	2.8	-3.0		1.4	5.4
Services	20.5	15.2	8.9	6.3		67.0	9.9	1.8	9.3	-11.9		7.4	3.5
Housing	1.8	21.6	15.4	6.3		71.2	5.1	2.0	4.9	-5.5		4.1	5.8
Transport	1.3	22.8	20.4	2.4		82.3	4.1	1.6	3.8	-5.2		2.9	8.1
Communication	2.6	7.5	4.7	2.9		53.7	9.6	-1.1	8.6	-11.9		5.6	2.0
Recreation	13.3	16.7	9.2	7.5		66.8	10.4	1.9	9.8	-12.5		7.8	3.3
Miscellaneous	2.2	8.0	5.5	2.4		70.2	6.6	2.1	6.5	-8.1		6.1	2.8
Food & non-alcoholic beverages	10.8	29.4	15.2	14.2		52.7	7.2	0.3	7.0	-7.1		6.7	4.0
Alcoholic beverages & tobacco	2.4	27.5	16.5	11.0		59.8	5.2	0.4	4.8	-5.6		5.1	5.8
Clothing & footwear	3.6	10.0	5.2	4.8		51.6	15.3	-0.1	15.1	-16.0		11.1	3.5
Housing & energy	3.3	60.3	31.9	28.4		54.1	5.4	0.0	4.4	-4.9		2.6	3.8
Household goods & services	4.2	7.7	4.3	3.4		54.9	9.2	0.3	8.6	-9.5		7.0	2.2
Healthcare	1.5	5.5	3.3	2.2		56.9	6.1	0.4	5.9	-6.7		5.3	2.2
Transport	7.0	46.8	25.0	21.8		55.3	3.4	0.2	3.0	-3.4		1.7	5.3
Communications	2.8	8.1	4.7	3.3		54.5	9.4	-0.3	9.1	-10.4		6.3	2.8
Recreation & culture	7.4	27.1	14.0	13.0		54.2	11.1	0.1	10.6	-11.8		8.9	4.0
Education	0.2	10.4	8.9	1.5		81.0	16.5	7.0	15.3	-20.7		18.1	4.7
Restaurants & hotels	8.5	10.6	6.0	4.5		69.3	9.6	2.2	9.0	-11.7		6.6	2.6
Other goods & services	3.5	10.9	6.3	4.6		59.0	7.4	0.9	7.0	-7.6		6.2	2.9
Fully online	3.7	37.7	18.7	19.0		50.9	11.7	-0.4	11.3	-12.1		9.6	4.3
Partially online	5.2	8.6	4.6	4.0		53.3	13.4	0.0	13.0	-14.2		9.7	3.1
Offline	46.4	24.3	13.2	11.1		57.7	7.1	0.7	6.7	-7.3		5.5	3.9

Notes: Average price-setting moments by sector, COICOP two-digit main group, and mode of price collection, for the Swiss CPI microdata sample from January 2008 to December 2025, excluding price changes due to temporary sales but including price changes due to product substitutions. Sectors correspond to the COICOP-HICP special aggregates defined by Eurostat. COICOP main groups correspond to COICOP two-digit divisions. The frequency measures are weighted averages of variety-level shares of price changes, increases, decreases, and sales-related price changes, respectively. "Share of increases" is the share of price increases in all non-zero price changes. The size measures are weighted averages of the mean log price change ("Average"), the mean absolute log price change ("Absolute"), the mean size of price increases and decreases, the mean absolute size of sales-related price changes, the standard deviation of absolute log price changes, and the kurtosis of standardized price changes. "Weight" is the average CPI expenditure weight over the sample period, in percent. All moments are first computed at the variety level and then aggregated as a weighted mean across varieties using CPI expenditure weights. Values are reported in percent per month.

Table B.11 summarizes average price-setting moments using the sample including price changes due to temporary sales but excluding price changes due to product substitutions.

Table B.11. Cross-sectional price-setting moments - including sales, excluding substitutions

		Frequency of price adjustments					Size of price adjustments						
	Weight	Changes	Increases	Decreases	Sales	Share of Increases	Absolute Changes	Average Changes	Increases	Decreases	Sales	Std. dev.	Kurtosis
		f	f^+	f^-	f^s	$\frac{f^+}{f}$	$\lvert\Delta p\rvert$	Δp	Δp^+	Δp^-	$\lvert\Delta p^s\rvert$	sd($\lvert\Delta p\rvert$)	Kur(z)
Food	13.2	29.3	15.5	13.7	1.2	53.6	7.7	0.3	7.5	-7.8	23.5	7.2	4.3
Unprocessed food	3.5	42.9	21.5	21.4	1.4	50.6	10.0	0.0	9.6	-9.6	27.1	8.9	5.0
Processed food	9.7	24.6	13.5	11.2	1.1	54.6	6.9	0.4	6.7	-7.1	21.8	6.7	4.1
NEIG	17.6	15.6	7.5	8.0	5.9	49.5	15.7	-2.1	13.9	-16.3	28.4	10.2	3.1
Durable goods	8.0	18.1	9.0	9.1	5.6	49.6	12.0	-1.4	11.0	-12.8	23.4	7.7	3.1
Semi-durable goods	7.2	13.2	5.7	7.5	7.8	46.7	21.7	-4.0	18.6	-21.8	32.8	13.6	3.0
Non-durable goods	2.4	12.9	7.4	5.5	1.9	56.6	10.5	0.6	9.9	-11.1	27.3	8.6	3.2
Energy	4.0	77.3	39.6	37.7	0.1	49.9	3.5	-0.1	2.9	-3.0	5.4	1.4	5.5
Services	20.5	13.4	7.9	5.5	0.2	70.2	9.7	2.2	9.1	-12.0	23.4	7.3	3.6
Housing	1.8	19.9	14.8	5.1	0.0	72.7	4.9	2.1	4.8	-5.2		3.9	5.5
Transport	1.3	21.6	19.5	2.1	0.2	82.4	4.2	1.6	3.9	-5.3	20.8	2.9	8.3
Communication	2.6	5.0	2.9	2.1	0.0	61.8	7.6	0.5	7.0	-9.4		3.0	2.2
Recreation	13.3	14.8	8.2	6.6	0.2	69.7	10.3	2.3	9.7	-12.7	23.4	7.8	3.3
Miscellaneous	2.2	6.9	5.0	1.9	0.0	74.4	6.1	2.4	5.9	-7.6	22.3	4.7	2.9
Food & non-alcoholic beverages	10.8	29.4	15.2	14.2	1.1	52.4	7.9	0.3	7.7	-7.9	25.0	7.5	4.1
Alcoholic beverages & tobacco	2.4	28.5	16.9	11.6	1.8	59.1	6.9	0.3	6.4	-7.3	18.8	6.0	5.4
Clothing & footwear	3.6	15.4	5.3	10.1	14.6	39.0	33.5	-8.5	28.6	-32.0	36.8	18.6	3.2
Housing & energy	3.3	59.8	31.7	28.1	0.2	53.9	6.1	-0.0	4.9	-5.5	24.7	2.8	3.7
Household goods & services	4.2	12.9	6.6	6.3	8.3	51.2	17.7	-0.9	16.5	-18.6	26.3	11.8	2.7
Healthcare	1.5	4.5	2.9	1.7	0.7	58.3	7.1	-0.3	6.3	-9.1	21.8	6.0	2.3
Transport	7.0	45.7	24.2	21.4	1.4	54.2	3.5	0.0	3.1	-3.5	9.8	1.7	5.3
Communications	2.8	5.7	3.1	2.6	0.3	57.4	7.4	-0.2	6.7	-8.8	16.8	4.5	2.8
Recreation & culture	7.4	24.2	12.4	11.8	2.0	53.9	12.0	-0.2	11.2	-12.7	23.5	9.2	3.8
Education	0.2	8.3	7.6	0.8	0.0	87.1	10.8	6.6	10.4	-15.9	22.3	10.3	4.2
Restaurants & hotels	8.5	9.9	5.7	4.2	0.2	73.2	9.6	2.7	8.9	-12.3	27.5	6.8	2.7
Other goods & services	3.5	11.2	6.3	5.0	1.9	58.2	10.4	0.4	9.3	-11.3	26.5	8.6	3.2
Fully online	3.7	33.1	16.1	16.9	1.7	50.5	11.4	-0.7	10.8	-11.9	19.3	9.1	4.1
Partially online	5.2	16.1	6.5	9.6	14.9	42.7	29.3	-6.2	25.4	-28.7	32.0	16.6	3.2
Offline	46.4	24.0	12.9	11.1	1.2	57.8	8.1	0.6	7.6	-8.5	24.0	6.3	4.0

Notes: Average price-setting moments by sector, COICOP two-digit main group, and mode of price collection, for the Swiss CPI microdata sample from January 2008 to December 2025, including price changes due to temporary sales but excluding price changes due to product substitutions. Sectors correspond to the COICOP-HICP special aggregates defined by Eurostat. COICOP main groups correspond to COICOP two-digit divisions. The frequency measures are weighted averages of variety-level shares of price changes, increases, decreases, and sales-related price changes, respectively. "Share of increases" is the share of price increases in all non-zero price changes. The size measures are weighted averages of the mean log price change ("Average"), the mean absolute log price change ("Absolute"), the mean size of price increases and decreases, the mean absolute size of sales-related price changes, the standard deviation of absolute log price changes, and the kurtosis of standardized price changes. "Weight" is the average CPI expenditure weight over the sample period, in percent. All moments are first computed at the variety level and then aggregated as a weighted mean across varieties using CPI expenditure weights. Values are reported in percent per month.

Table B.12 summarizes average price-setting moments using the sample excluding price changes due to temporary sales and product substitutions.

Table B.12. Cross-sectional price-setting moments - excluding sales, excluding substitutions

		Frequency of price adjustments					Size of price adjustments						
	Weight	Changes	Increases	Decreases	Sales	Share of Increases	Absolute Changes	Average Changes	Increases	Decreases	Sales	Std. dev.	Kurtosis
		f	f^+	f^-	f^s	$\frac{f^+}{f}$	$\lvert\Delta p\rvert$	Δp	Δp^+	Δp^-	$\lvert\Delta p^s\rvert$	sd($\lvert\Delta p\rvert$)	Kur(z)
Food	13.2	27.9	14.8	13.0		53.9	6.4	0.3	6.2	-6.3		5.9	4.1
Unprocessed food	3.5	41.4	20.8	20.6		50.8	9.0	0.1	8.5	-8.4		7.5	4.8
Processed food	9.7	23.3	12.8	10.5		55.0	5.5	0.4	5.3	-5.6		5.3	3.9
NEIG	17.6	11.3	5.9	5.4		53.5	7.5	-0.1	6.8	-7.8		5.3	2.7
Durable goods	8.0	14.7	7.4	7.2		51.9	6.5	-0.6	5.8	-7.0		4.4	2.8
Semi-durable goods	7.2	6.9	3.6	3.2		53.6	8.7	0.0	8.0	-8.9		6.0	2.3
Non-durable goods	2.4	11.4	6.7	4.8		57.6	7.4	0.8	7.1	-7.6		6.0	2.8
Energy	4.0	77.2	39.5	37.7		49.9	3.5	-0.1	2.8	-3.0		1.4	5.4
Services	20.5	13.3	7.8	5.4		70.5	9.3	2.2	8.9	-11.6		7.1	3.6
Housing	1.8	19.9	14.8	5.1		72.7	4.9	2.1	4.8	-5.2		3.9	5.5
Transport	1.3	21.5	19.4	2.1		82.5	4.1	1.7	3.8	-5.1		2.8	8.3
Communication	2.6	5.0	2.9	2.1		61.8	7.6	0.5	7.0	-9.4		3.0	2.2
Recreation	13.3	14.7	8.2	6.6		70.1	9.8	2.3	9.4	-12.3		7.6	3.3
Miscellaneous	2.2	6.9	5.0	1.9		74.4	6.1	2.4	5.9	-7.6		4.7	2.9
Food & non-alcoholic beverages	10.8	28.1	14.6	13.5		52.7	6.7	0.3	6.5	-6.6		6.1	3.8
Alcoholic beverages & tobacco	2.4	26.7	16.1	10.6		60.1	4.9	0.4	4.5	-5.2		4.8	5.6
Clothing & footwear	3.6	3.3	1.8	1.5		51.9	10.6	-0.1	10.1	-11.0		6.2	1.7
Housing & energy	3.3	59.6	31.6	28.0		54.2	5.3	0.0	4.3	-4.8		2.6	3.7
Household goods & services	4.2	6.5	3.6	2.9		55.4	8.4	0.3	7.7	-8.7		6.6	2.2
Healthcare	1.5	4.3	2.7	1.5		59.2	5.7	-0.1	4.9	-6.8		4.4	2.2
Transport	7.0	45.4	24.1	21.3		54.5	3.3	0.1	2.9	-3.2		1.6	5.2
Communications	2.8	5.5	3.1	2.5		57.3	6.9	-0.1	6.2	-8.0		3.9	2.8
Recreation & culture	7.4	23.1	11.9	11.2		54.4	10.1	0.1	9.6	-10.9		8.0	3.8
Education	0.2	8.3	7.5	0.8		87.2	10.7	6.6	10.4	-15.8		10.3	4.1
Restaurants & hotels	8.5	9.8	5.6	4.2		73.7	9.1	2.8	8.6	-11.7		6.5	2.7
Other goods & services	3.5	9.6	5.5	4.1		59.9	6.4	1.0	6.1	-6.5		5.4	2.8
Fully online	3.7	32.1	15.7	16.4		50.3	10.8	-0.6	10.2	-11.3		8.7	4.1
Partially online	5.2	3.9	2.2	1.7		53.9	10.2	0.0	9.5	-10.8		6.5	1.9
Offline	46.4	23.1	12.5	10.6		58.4	6.5	0.8	6.2	-6.6		5.0	3.9

Notes: Average price-setting moments by sector, COICOP two-digit main group, and mode of price collection, for the Swiss CPI microdata sample from January 2008 to December 2025, excluding price changes due to temporary sales and product substitutions. Sectors correspond to the COICOP-HICP special aggregates defined by Eurostat. COICOP main groups correspond to COICOP two-digit divisions. The frequency measures are weighted averages of variety-level shares of price changes, increases, decreases, and sales-related price changes, respectively. "Share of increases" is the share of price increases in all non-zero price changes. The size measures are weighted averages of the mean log price change ("Average"), the mean absolute log price change ("Absolute"), the mean size of price increases and decreases, the mean absolute size of sales-related price changes, the standard deviation of absolute log price changes, and the kurtosis of standardized price changes. "Weight" is the average CPI expenditure weight over the sample period, in percent. All moments are first computed at the variety level and then aggregated as a weighted mean across varieties using CPI expenditure weights. Values are reported in percent per month.

Table B.13 summarizes average price-setting moments at the expenditure-item (five-digit COICOP subclass) level.

Table B.13. Price-setting moments by expenditure item

		Frequency of price adjustments					Size of price adjustments						
		Changes	Increases	Decreases	Sales	Share of Increases	Absolute Changes	Average Changes	Increases	Decreases	Sales	Std. dev.	Kurtosis
	Weight	f	f^+	f^-	f^s	$\frac{f^+}{f}$	$\lvert\Delta p\rvert$	Δp	Δp^+	Δp^-	$\lvert\Delta p^s\rvert$	sd($\lvert\Delta p\rvert$)	Kur(z)
01003: Rice	0.0	22.4	12.1	10.3	1.2	53.7	9.3	0.6	9.0	-9.6	22.9	8.1	3.4
01008: Flour and other cereals	0.1	17.4	9.3	8.1	0.7	53.2	8.9	0.4	8.5	-8.7	25.1	8.0	2.9
01015: Bread	0.5	12.3	7.0	5.3	0.3	56.0	4.8	0.6	4.8	-4.8	24.2	5.2	3.1
01027: Small baked goods	0.2	22.7	11.9	10.8	0.1	55.1	4.9	1.0	5.0	-4.1	26.1	4.4	3.8
01036: Viennese pastries, pastry products	0.3	27.7	14.5	13.2	0.1	52.5	4.6	0.4	4.7	-4.3	19.4	4.3	5.7
01048: Biscuit/rusk products	0.3	16.4	9.0	7.4	0.7	53.7	7.4	0.3	7.0	-7.7	23.6	7.6	2.9
01056: Pizza and quiche	0.1	37.3	19.3	17.9	1.2	51.7	6.7	0.2	6.8	-7.0	29.2	7.8	3.6
01058: Pasta	0.1	25.0	12.9	12.1	1.4	51.4	12.0	0.4	12.1	-11.9	26.6	10.4	3.2
01065: Other cereal products	0.1	20.8	10.9	9.9	1.4	52.6	7.3	0.2	7.1	-7.5	25.4	7.4	2.6
01073: Breakfast cereals	0.1	27.0	14.6	12.4	1.0	54.3	6.7	0.3	6.2	-6.9	22.8	6.8	3.9
01076: Beef	0.4	39.5	20.9	18.6	1.8	52.8	8.2	0.3	8.1	-8.4	23.9	9.0	4.4
01088: Veal	0.1	37.9	20.6	17.3	1.8	54.3	7.8	0.3	7.6	-8.1	19.9	7.7	3.8
01097: Pork	0.3	41.2	21.1	20.0	2.1	51.5	7.5	0.1	7.5	-7.7	25.5	8.8	5.6
01107: Lamb	0.1	35.6	18.9	16.7	1.6	53.3	8.6	0.4	8.2	-8.4	24.3	8.6	3.7
01115: Poultry	0.4	36.7	18.5	18.3	1.7	50.4	6.9	0.1	7.0	-7.0	24.8	7.8	4.6
01133: Other meat, fresh	0.1	33.2	16.5	16.7	1.4	51.5	7.0	0.4	6.9	-6.7	21.3	6.9	4.2
01145: Sausages	0.5	17.4	9.4	8.1	1.4	53.5	9.8	0.4	10.0	-10.4	25.3	10.1	3.0
01155: Cold cuts and other meat products	0.5	40.8	21.3	19.5	0.7	52.2	4.4	0.2	4.5	-4.4	21.9	6.1	7.3
01168: Preparations of raw meat ready to cook	0.1	60.9	31.1	29.8	0.6	51.2	5.5	0.1	5.4	-5.5	22.6	6.5	8.0
01170: Cold cuts, other meat products and meat preparations	0.5	26.0	13.2	12.7	1.1	51.8	7.0	0.2	6.7	-7.0	23.2	7.2	4.6
01180: Fresh fish	0.2	53.4	27.1	26.3	1.1	50.6	7.8	0.2	7.7	-7.7	26.2	8.2	6.2
01187: Frozen fish	0.1	30.2	15.8	14.3	1.3	52.7	7.1	0.2	6.9	-7.5	24.8	8.1	3.1
01192: Tinned fish and smoked fish	0.1	26.7	14.1	12.6	0.8	53.7	8.7	0.5	8.3	-9.1	28.0	8.9	4.2

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Table B.13. Price-setting moments by expenditure item (continued)

	Weight	f	f^+	f^-	f^s	$\frac{f^+}{f}$	$\lvert\Delta p\rvert$	Δp	Δp^+	Δp^-	$\lvert\Delta p^s\rvert$	sd($\lvert\Delta p\rvert$)	Kur(z)
01200: Whole milk	0.1	15.5	8.5	7.0	0.4	54.1	5.1	0.6	5.2	-4.7	19.7	4.8	2.2
01207: Low fat milk	0.1	18.8	10.2	8.6	0.5	52.8	4.6	0.4	4.8	-4.4	19.0	4.4	2.2
01218: Hard and semi-hard cheese	0.5	38.9	19.9	18.9	1.2	51.6	7.2	0.2	6.8	-7.1	24.2	7.1	5.6
01230: Fresh, soft and melted cheese	0.3	32.0	16.5	15.5	0.8	51.7	5.1	0.2	5.1	-5.2	23.8	5.8	5.3
01246: Drink and milk desserts	0.2	19.2	10.3	8.8	1.1	53.2	8.2	0.2	8.0	-8.6	25.4	7.5	2.5
01247: Yoghurt	0.2	23.9	12.3	11.5	1.1	51.9	7.9	0.4	7.8	-8.0	29.1	7.9	3.4
01265: Cream	0.1	15.0	8.1	6.9	0.8	51.2	6.1	0.0	6.0	-6.2	16.8	5.3	1.8
01278: Eggs	0.2	35.6	18.7	16.8	0.5	52.7	3.0	0.3	3.1	-3.0	21.8	4.1	5.9
01285: Butter	0.1	18.0	10.6	7.5	0.6	56.8	3.7	0.7	3.8	-3.6	15.8	3.7	2.5
01290: Olive oil	0.1	31.8	18.1	13.7	1.1	56.4	9.5	1.0	9.2	-9.5	23.8	11.1	4.9
01291: Other edible oils	0.0	29.0	15.4	13.6	1.7	52.1	9.6	0.3	9.4	-9.8	25.8	10.6	3.5
01293: Margarine, fats, edible oils	0.1	20.1	10.7	9.4	1.1	52.8	8.3	0.3	8.1	-8.8	25.0	8.6	2.5
01294: Margarine and edible fats	0.0	33.5	17.7	15.8	1.9	51.1	5.4	0.3	5.8	-5.2	21.5	6.2	2.4
01308: Citrus fruit	0.1	49.4	24.9	24.5	1.3	51.0	13.6	0.2	13.3	-13.0	38.5	11.6	4.7
01316: Stone fruit	0.1	65.7	31.0	34.7	2.0	50.5	28.0	2.7	26.8	-23.6	40.4	19.0	5.0
01325: Pome fruit	0.1	46.0	23.1	22.9	1.3	50.3	10.7	0.2	10.7	-10.4	28.0	10.5	4.9
01333: Bananas	0.1	43.1	21.6	21.5	2.3	50.0	8.3	-0.1	8.5	-8.4	26.4	8.4	6.0
01335: Tropical fruits	0.1	54.6	28.1	26.5	1.3	51.5	16.5	0.9	16.7	-15.7	39.3	14.0	4.9
01338: Melons and grapes	0.1	62.2	30.4	31.8	2.9	49.5	22.9	-0.0	22.1	-21.9	37.8	16.0	5.6
01346: Berries	0.1	70.4	34.4	36.0	1.4	49.2	21.5	-0.0	21.5	-20.1	32.1	15.8	4.5
01347: Dried fruit and nuts	0.2	25.2	13.0	12.2	0.8	51.1	7.9	0.3	7.9	-7.7	21.4	7.6	3.4
01352: Preserved fruit	0.0	29.8	16.6	13.2	0.7	55.7	6.6	0.5	6.2	-6.7	21.0	6.0	1.9
01358: Frozen fruit	0.0	38.0	19.9	18.0	0.4	52.9	5.6	0.2	5.4	-5.7	23.4	6.2	4.0
01361: Fruiting vegetables	0.2	69.7	34.2	35.5	1.3	48.9	19.3	-0.3	17.7	-17.5	37.6	12.8	6.3
01369: Root vegetables	0.2	56.6	26.5	30.1	0.7	47.0	12.0	-0.3	11.7	-10.8	33.6	9.4	5.6
01379: Salad vegetables	0.2	56.9	28.0	28.9	1.5	49.4	13.9	-0.1	13.2	-13.0	35.0	11.0	6.5
01391: Brassicas	0.1	63.3	30.8	32.4	1.1	48.5	16.9	-0.2	15.9	-15.2	36.8	12.1	4.7

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Table B.13. Price-setting moments by expenditure item (continued)

	Weight	f	f^+	f^-	f^s	$\frac{f^+}{f}$	$\lvert\Delta p\rvert$	Δp	Δp^+	Δp^-	$\lvert\Delta p^s\rvert$	sd($\lvert\Delta p\rvert$)	Kur(z)
01400: Onions and leeks	0.1	41.6	19.2	22.4	0.2	46.8	12.7	-0.4	12.6	-12.0	30.0	11.3	5.4
01407: Other vegetables, aromatic herbs and mushrooms	0.1	45.0	22.2	22.8	1.0	50.6	12.2	0.1	12.3	-11.9	34.3	10.9	5.7
01417: Potatoes	0.1	49.3	24.7	24.6	0.5	50.9	13.1	0.2	12.5	-12.4	30.2	11.2	4.8
01423: Dried and tinned vegetables and mushrooms	0.1	19.7	10.4	9.4	0.7	53.1	8.0	0.5	8.0	-8.2	23.5	7.4	2.2
01425: Preserved vegetables	0.0	32.5	17.1	15.4	0.6	51.5	5.9	0.1	6.0	-6.0	22.8	5.7	2.0
01440: Potato products	0.1	21.3	11.2	10.0	1.5	51.9	8.7	0.2	8.6	-9.1	24.7	8.6	2.2
01449: Jam and honey	0.1	17.7	9.6	8.1	0.8	54.5	7.8	0.8	7.8	-7.8	23.1	7.7	2.9
01454: Crisps	0.1	23.8	12.6	11.2	1.0	52.9	7.5	0.2	7.3	-7.9	23.3	7.6	4.6
01455: Chocolate	0.4	21.6	12.2	9.4	1.0	56.1	7.7	0.6	7.3	-8.1	23.9	8.8	6.2
01461: Sweets and chewing gum	0.1	12.2	6.6	5.6	1.0	53.9	6.1	0.5	6.2	-6.2	25.8	7.1	2.7
01468: Ice-cream	0.1	29.3	15.7	13.6	1.4	54.2	7.6	0.3	7.3	-7.8	26.3	8.0	2.6
01475: Sugar	0.0	16.8	8.5	8.3	0.2	51.3	5.7	0.2	5.5	-5.3	23.1	5.5	2.2
01478: Sauces and condiments	0.2	25.9	13.7	12.2	1.4	52.8	7.3	0.3	7.2	-7.3	23.3	7.5	3.4
01482: Dry soups, spices, sauces	0.5	17.1	9.1	8.0	0.9	53.1	8.0	0.4	7.8	-8.3	23.1	6.9	2.5
01486: Salt, spices and culinary herbs	0.0	11.5	6.4	5.1	0.3	57.6	5.1	0.7	5.2	-5.0	21.7	6.1	2.5
01491: Soups and other food products	0.3	29.5	15.1	14.3	1.2	51.2	6.0	0.2	5.9	-5.9	23.7	6.0	3.1
01505: Ready-made foods	0.2	31.0	16.1	14.9	0.9	52.3	5.9	0.3	5.9	-6.0	25.9	6.4	3.0
01530: Coffee (retail)	0.3	28.2	15.0	13.2	1.6	53.2	8.6	0.4	8.6	-8.9	21.3	8.3	2.8
01532: Tea (retail)	0.1	20.9	11.2	9.6	0.8	53.2	5.7	0.3	5.9	-6.0	24.2	5.7	2.8
01536: Baby food	0.0	42.4	21.6	20.8	1.4	49.7	5.3	-0.1	5.1	-5.1	24.5	5.2	2.9
01539: Cocoa and chocolate powder	0.0	24.6	13.2	11.4	1.1	54.4	6.6	0.6	6.7	-6.6	20.5	7.9	4.9
01545: Natural mineral water	0.1	14.7	7.9	6.8	1.3	55.0	13.9	0.3	13.7	-15.1	29.0	13.1	2.7
01552: Soft drinks	0.2	16.2	8.6	7.6	0.9	53.1	10.6	0.3	10.1	-11.2	26.0	10.1	2.9
01563: Fruit or vegetable juices	0.2	17.4	9.4	8.0	1.4	53.9	10.4	0.6	10.4	-10.7	22.0	10.2	4.2
02003: Spirits/brandies (retail)	0.1	18.0	9.7	8.4	1.1	54.4	5.9	0.4	5.8	-6.0	12.2	6.1	2.8

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Table B.13. Price-setting moments by expenditure item (continued)

	Weight	f	f^+	f^-	f^s	$\frac{f^+}{f}$	$\lvert\Delta p\rvert$	Δp	Δp^+	Δp^-	$\lvert\Delta p^s\rvert$	sd($\lvert\Delta p\rvert$)	Kur(z)
02010: Liqueurs and aperitifs	0.1	18.9	10.0	8.8	1.0	53.7	6.3	0.2	5.9	-6.5	14.3	6.1	2.6
02019: Swiss red wine	0.1	17.2	9.5	7.6	1.9	57.0	11.8	0.7	10.8	-12.4	22.8	9.3	5.4
02031: Foreign red wine	0.4	28.3	15.2	13.1	3.1	53.6	14.6	0.1	13.7	-15.3	23.3	12.1	7.1
02046: Swiss white wine	0.1	20.9	11.7	9.2	1.5	57.6	11.0	0.8	10.3	-12.1	22.5	9.0	6.8
02056: Foreign white wine	0.1	30.9	16.7	14.1	2.8	53.9	12.2	0.1	11.6	-13.0	21.2	10.4	9.1
02058: Sparkling wine	0.1	31.7	17.0	14.7	3.1	53.4	12.6	0.3	11.4	-12.2	21.1	10.5	9.9
02061: Lager beer, light	0.1	50.5	26.1	24.4	1.3	51.5	7.0	0.2	7.4	-7.0	24.7	9.2	9.2
02062: Specialty beers	0.1	54.0	29.1	24.9	0.8	53.4	6.4	0.3	6.2	-6.5	18.5	6.7	5.2
02063: Non-alcoholic beers and beer-based beverages	0.1	39.9	21.2	18.8	2.7	53.0	8.6	0.3	8.0	-8.7	22.9	8.8	6.0
02064: Beer (retail)	0.2	26.5	14.1	12.4	1.7	54.2	8.9	0.6	8.7	-9.1	21.2	9.0	3.8
02076: Cigarettes	1.1	34.7	22.1	12.7	1.3	63.5	2.1	0.4	1.9	-2.4	7.0	2.3	5.2
02082: Other tobaccos	0.2	20.6	13.5	7.1	1.6	63.3	4.7	0.2	4.2	-5.5	11.5	4.6	3.4
03004: Jackets for men	0.2	27.6	13.2	14.4	17.1	41.0	34.8	-6.5	30.2	-30.6	38.0	21.7	5.7
03015: Men's suits	0.1	23.2	11.2	11.9	13.5	48.4	33.6	0.3	30.9	-28.4	34.4	21.8	3.4
03020: Men's trousers	0.2	23.5	11.2	12.2	13.2	46.9	32.3	-1.6	29.3	-28.4	34.6	20.6	3.7
03027: Men's shirts	0.1	22.3	10.9	11.4	15.7	47.7	32.7	-1.3	29.3	-29.3	34.7	20.2	3.4
03033: Men's knitwear	0.2	24.4	11.7	12.7	15.9	45.3	35.3	-3.1	32.5	-31.6	38.7	22.3	4.6
03041: Men's underwear	0.1	11.5	6.1	5.4	5.3	50.8	27.2	-0.2	25.4	-25.8	30.7	18.0	2.2
03061: Women's coats and jackets	0.2	33.4	15.5	17.9	19.6	42.3	35.7	-4.8	32.1	-31.8	37.1	23.0	9.8
03067: Costumes, pantsuits, dresses	0.1	33.9	16.1	17.9	29.7	35.8	36.4	-9.0	37.1	-28.4	39.4	22.5	4.2
03074: Women's skirts and dresses	0.2	33.4	15.2	18.3	20.9	40.8	39.5	-5.3	35.9	-33.7	39.2	23.9	6.6
03079: Women's trousers	0.3	28.8	13.2	15.6	17.3	43.4	36.2	-3.4	33.0	-31.0	38.1	22.8	4.6
03086: Jackets	0.3	31.1	14.1	17.0	24.6	39.6	38.6	-6.1	36.4	-32.6	40.8	22.8	4.3
03093: Women's blouses	0.1	31.9	14.6	17.3	22.2	41.4	38.8	-5.0	36.0	-33.4	39.9	23.2	7.3
03099: Women's jumpers	0.3	30.0	14.1	15.9	22.6	41.6	37.7	-5.7	33.7	-33.0	40.1	22.2	7.4
03106: Women's underwear	0.2	15.3	7.9	7.5	7.2	49.9	31.4	-1.3	28.7	-30.0	36.7	18.5	2.2
03126: Children's jackets	0.0	31.1	14.6	16.5	21.3	39.7	36.5	-7.5	33.1	-33.1	39.4	21.4	5.5

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Table B.13. Price-setting moments by expenditure item (continued)

	Weight	f	f^+	f^-	f^s	$\frac{f^+}{f}$	$\lvert\Delta p\rvert$	Δp	Δp^+	Δp^-	$\lvert\Delta p^s\rvert$	sd($\lvert\Delta p\rvert$)	Kur(z)
03134: Children's trousers and skirts	0.1	32.8	14.8	18.0	20.4	42.1	38.0	-4.0	36.8	-32.8	38.3	21.7	4.7
03141: Children's knitwear	0.1	29.7	14.0	15.7	19.7	44.6	36.8	-3.4	34.2	-32.7	37.6	22.2	5.0
03148: Babies' clothing	0.1	28.7	13.4	15.3	16.6	43.6	36.6	-4.0	34.0	-33.5	38.8	20.2	4.3
03150: Children's underwear	0.0	18.4	8.8	9.6	10.8	47.3	33.3	-0.9	32.2	-29.8	36.5	20.4	2.3
03169: Clothing fabrics	0.0	2.4	1.5	0.8	0.1	66.3	10.5	3.3	10.4	-10.5	10.4	4.0	1.3
03175: Haberdashery and knitting wool	0.0	1.5	1.0	0.5	0.1	65.3	8.8	2.6	9.2	-8.9	25.4	5.2	1.4
03183: Clothing accessories	0.1	18.3	8.9	9.4	10.4	45.9	36.0	-2.4	33.6	-32.6	39.2	23.0	4.3
03190: Garment alterations	0.0	3.5	2.5	1.0	0.1	72.1	16.3	5.9	15.5	-17.2	69.3	9.3	1.6
03198: Dry cleaning	0.1	5.1	4.0	1.1	0.1	78.9	10.4	4.6	9.4	-13.1	40.2	5.4	1.5
03212: Women's footwear	0.4	21.1	10.2	11.0	13.9	45.2	31.3	-3.6	27.7	-28.5	36.1	19.7	3.3
03220: Men's footwear	0.2	18.8	9.1	9.7	11.5	45.8	28.4	-2.8	26.0	-26.0	33.8	18.2	2.9
03228: Children's footwear	0.1	22.0	10.5	11.5	14.7	44.7	32.9	-3.5	30.2	-29.5	35.6	18.8	2.4
03237: Shoe repairs	0.0	6.1	5.5	0.6	0.0	89.9	8.3	6.3	8.0	-8.6	26.2	3.4	1.6
03310: Winter sportswear	0.1	24.2	11.9	12.3	11.4	41.4	29.1	-6.4	24.9	-26.4	37.1	19.8	3.4
03320: Summer/year-round sportswear	0.1	19.0	9.2	9.8	9.6	44.8	28.1	-3.8	26.5	-27.0	34.7	17.5	2.3
04010: Dwelling repair products	0.1	6.3	3.8	2.6	2.0	57.7	17.7	0.4	15.8	-20.1	31.2	9.4	1.6
04020: House maintenance services	1.4	31.8	21.8	10.0	0.0	65.7	5.2	1.1	4.8	-5.8		4.5	5.6
04025: Plumbing services	0.3	27.9	21.3	6.6	0.0	73.8	3.0	1.8	3.5	-3.1		3.3	9.0
04026: Electric installlation services	0.1	30.9	23.9	6.9	0.0	84.2	3.1	1.8	3.0	-4.7		3.5	8.7
04027: Painting and plastering services	0.1	30.9	20.3	10.6	0.0	65.4	2.9	1.1	3.2	-2.9		2.4	7.6
04029: Carpentry services	0.4	35.1	26.1	9.0	0.0	77.0	3.4	2.2	3.6	-3.6		2.5	5.3
04030: Charges for household waste elimination	0.2	28.7	22.5	6.2	0.0	65.0	5.6	0.8	5.7	-6.8		4.4	3.8
04036: Charges for water provision	0.3	41.0	39.1	1.9	0.0	85.9	11.5	7.5	11.7	-15.0		10.9	5.3

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Table B.13. Price-setting moments by expenditure item (continued)

	Weight	f	f^+	f^-	f^s	$\frac{f^+}{f}$	$\lvert\Delta p\rvert$	Δp	Δp^+	Δp^-	$\lvert\Delta p^s\rvert$	sd($\lvert\Delta p\rvert$)	Kur(z)
04042: Charges for sewerage	0.2	42.4	34.7	7.7	0.0	69.6	9.8	3.3	11.0	-15.2		9.9	8.2
04047: Maintenance and caretaking	1.1	23.4	9.6	13.8	0.0	55.8	6.2	3.1	8.3	-4.8		5.4	4.8
04053: Gas, consumer type II	0.2	7.6	1.3	6.3	0.0	14.0	12.1	-8.0	13.7	-11.4		6.8	1.9
04055: Gas, consumer type III	0.1	7.9	1.1	6.7	0.0	12.7	12.2	-8.6	13.1	-11.7		6.6	1.8
04057: Gas, consumer type IV	0.2	7.7	1.3	6.3	0.0	15.6	13.0	-8.6	12.8	-12.5		7.2	1.9
04059: Gas, consumer type V	0.1	7.7	1.4	6.2	0.0	15.7	13.8	-8.9	14.4	-13.0		7.6	1.9
04071: Electricity, consumer type I	0.3	4.9	2.6	2.2	0.0	49.8	11.1	1.6	8.5	-8.8		5.5	4.0
04073: Electricity, consumer type II	0.4	5.1	2.6	2.5	0.0	48.4	12.0	1.1	9.5	-13.1		7.1	5.8
04075: Electricity, consumer type III	0.1	5.1	2.5	2.5	0.0	48.4	12.5	1.9	9.7	-12.6		6.7	4.7
04077: Electricity, consumer type IV	0.3	5.1	2.6	2.5	0.0	48.5	12.8	1.1	9.4	-12.6		7.6	4.7
04079: Electricity, consumer type V	0.3	5.1	2.7	2.4	0.0	48.7	13.1	1.1	9.6	-13.3		7.4	4.1
04081: Electricity, consumer type VI	0.3	5.0	2.6	2.4	0.0	48.7	13.9	2.0	10.9	-15.3		7.6	4.4
04083: Electricity, consumer type VII	0.3	5.3	2.7	2.6	0.0	48.5	13.3	1.8	10.1	-13.2		7.9	4.1
04090: Heating oil	1.1	98.1	50.8	47.3	0.0	51.8	4.9	-0.1	3.8	-4.0	6.2	2.1	3.6
04100: District heating	0.1	4.5	3.1	1.4	0.0	63.9	9.7	3.3	10.3	-10.0		5.8	1.4
04110: Wood pellets	0.1	50.4	30.4	20.0	0.3	61.9	3.7	0.4	3.2	-3.9	12.5	2.1	2.2
04112: Wood logs	0.1	16.4	10.0	6.3	3.6	60.1	13.0	1.3	12.1	-13.9	30.3	5.2	1.5
05003: Living room and home office furniture	0.5	21.2	10.7	10.4	16.0	49.9	22.1	-0.9	21.0	-22.3	24.5	13.6	3.4
05020: Bedroom furniture	0.4	21.2	10.9	10.3	16.6	50.9	20.2	-0.6	19.5	-20.9	22.1	12.7	3.6
05031: Kitchen and dining room furniture	0.1	25.4	13.1	12.3	20.7	51.6	21.0	0.2	20.6	-21.8	23.9	15.7	5.0
05040: Garden furniture	0.2	14.8	7.4	7.5	16.7	50.4	26.9	-0.7	25.5	-27.0	30.4	15.2	2.3

Continued on next page

Table B.13. Price-setting moments by expenditure item (continued)

	Weight	f	f^+	f^-	f^s	$\frac{f^+}{f}$	$\lvert\Delta p\rvert$	Δp	Δp^+	Δp^-	$\lvert\Delta p^s\rvert$	sd($\lvert\Delta p\rvert$)	Kur(z)
05050: Furnishings	0.2	12.1	6.3	5.8	9.6	50.5	25.5	-1.7	23.3	-26.0	32.0	15.4	2.4
05055: Light fittings	0.1	19.3	9.6	9.7	16.1	49.5	22.7	-0.8	22.1	-22.7	25.9	15.3	3.6
05060: Carpets and floor coverings	0.1	6.7	3.9	2.9	5.0	56.5	19.6	0.5	17.8	-21.8	29.1	10.0	2.1
05071: Bed linen and accessories	0.2	10.3	5.3	5.0	7.3	51.7	24.6	-0.2	23.7	-25.6	28.9	13.4	2.0
05085: Household linen	0.1	11.0	5.8	5.1	6.4	53.1	23.5	0.7	22.1	-23.3	28.6	15.6	1.9
05090: Curtains and curtain accessories	0.1	8.3	4.6	3.8	4.9	57.3	21.5	0.9	20.6	-24.3	30.0	11.3	1.6
05101: Major household appliances	0.4	10.0	5.4	4.5	6.4	51.4	14.4	0.2	14.8	-14.7	27.0	11.1	2.3
05109: Refrigerators and freezers	0.1	21.2	10.5	10.7	4.7	48.1	10.0	-0.3	10.4	-10.0	22.5	10.5	4.0
05110: Washing machines, dryers and dishwashers	0.1	21.4	10.4	11.0	4.8	46.3	9.8	-0.2	10.7	-9.3	22.1	10.9	4.6
05111: Cookers, ovens and barbecues	0.1	18.7	9.6	9.1	5.3	49.2	9.5	-0.4	9.6	-9.9	24.0	9.5	3.2
05115: Air conditioning units	0.1	24.4	10.8	13.6	10.0	44.3	16.5	-1.8	16.5	-15.9	28.0	14.6	3.1
05117: Cleaning devices	0.1	28.3	13.8	14.6	9.5	48.6	12.6	-0.5	12.0	-12.6	22.9	11.3	3.7
05120: Smaller electric household appliances	0.2	15.0	7.4	7.6	9.6	49.5	20.7	-0.2	20.0	-20.0	31.5	15.7	2.6
05141: Kitchen utensils	0.1	8.2	4.4	3.8	5.1	53.7	17.1	0.1	16.0	-17.9	28.5	12.6	1.8
05150: Glassware and tableware	0.1	7.6	4.2	3.5	4.4	55.8	22.1	0.8	19.9	-23.3	32.0	13.3	1.8
05165: Cutlery	0.0	6.2	3.6	2.7	3.0	56.7	18.9	0.7	17.3	-21.4	28.9	12.2	1.8
05170: Other household equipment	0.1	8.0	4.2	3.7	1.7	54.2	14.5	0.7	13.6	-14.4	27.5	11.5	1.9
05181: Motorized tools for DIY and garden	0.1	7.8	3.8	4.0	6.1	49.0	15.9	-1.2	15.1	-16.9	27.0	10.4	1.6
05201: Non-motorized tools for house and garden	0.1	4.6	2.8	1.8	1.1	60.1	11.6	0.3	10.1	-14.2	30.1	8.4	2.0
05210: Equipment and other accessories for house and garden	0.3	5.4	3.1	2.3	1.5	55.7	13.6	0.4	12.2	-14.0	28.9	8.8	1.8

Continued on next page

Table B.13. Price-setting moments by expenditure item (continued)

	Weight	f	f^+	f^-	f^s	$\frac{f^+}{f}$	$\lvert\Delta p\rvert$	Δp	Δp^+	Δp^-	$\lvert\Delta p^s\rvert$	sd($\lvert\Delta p\rvert$)	Kur(z)
05222: Detergents and cleaning products	0.3	17.4	9.1	8.3	1.3	52.1	10.1	0.2	9.8	-10.3	30.5	11.0	2.8
05250: Cleaning articles	0.0	13.5	6.9	6.6	0.7	50.4	4.5	0.0	5.0	-4.8	20.6	5.6	2.1
05260: Household articles	0.2	12.3	6.6	5.7	1.0	53.5	8.6	0.6	8.4	-8.4	22.4	8.1	2.3
05280: Household cleaning services	0.3	10.0	8.4	1.6	0.0	80.4	8.4	4.0	7.7	-8.4		4.9	3.0
06016: Therapeutic devices	0.5	10.6	6.4	4.2	1.2	55.3	11.0	0.1	10.1	-11.5	14.5	7.6	2.7
06017: Glasses and contact lenses	0.4	5.9	2.8	3.1	3.8	48.7	10.4	0.5	9.6	-10.6	29.5	9.3	2.3
06018: Hearing aids and other therapeutic devices	0.2	8.8	4.9	3.9	3.5	54.7	11.3	0.5	10.9	-11.5	17.1	9.3	3.3
06035: Out-patient medical services in hospitals	1.8	5.6	3.5	2.2	0.0	58.1	0.6	0.1	0.6	-0.6		0.6	1.0
06036: Dental services	1.3	9.8	9.4	0.4	0.0	88.6	3.9	3.0	3.9	-4.1		1.1	2.5
06053: Laboratory analyses	0.8	0.0	0.0	0.0	0.0								
06062: Physiotherapy	0.6	0.0	0.0	0.0	0.0								
06063: Home care Spitex	0.7	0.3	0.3	0.0	0.0	100.0	3.2	3.2	3.2				
06070: Medical products	0.1	13.6	7.1	6.5	1.4	51.9	7.0	-0.2	6.6	-7.5	25.0	7.0	2.4
07003: New cars	2.7	25.6	14.0	11.6	2.4	57.0	3.4	0.0	3.1	-3.7	3.0	1.8	3.2
07062: Motorcycles	0.2	10.3	6.6	3.7	2.2	63.7	6.8	0.2	5.7	-8.0	10.9	4.0	3.1
07071: Bicycles and electric bicycles	0.2	9.3	4.5	4.8	3.8	50.8	14.6	0.0	13.7	-14.3	22.9	9.5	2.6
07075: Bicycles	0.1	22.8	12.3	10.5	9.7	54.2	15.4	-0.0	14.6	-16.2	25.5	12.5	4.6
07083: Spare parts	0.1	15.8	11.6	4.2	0.0	70.1	5.7	0.9	4.8	-7.6		4.6	4.5
07085: Electric bicycles	0.2	28.0	14.8	13.2	12.1	53.0	12.4	-0.6	11.8	-13.1	19.7	10.5	3.3
07094: Vehicle accessories	0.1	6.6	4.2	2.3	2.6	64.3	11.6	1.3	10.8	-13.3	29.8	8.5	2.9
07096: Tyres	0.2	15.5	8.3	7.2	1.8	54.0	7.3	-0.0	6.5	-7.9	13.6	5.5	3.8
07110: Petrol	1.7	84.4	43.3	41.1	0.2	49.7	2.5	0.0	2.1	-2.1	4.4	0.9	6.1
07111: Diesel	0.6	82.2	40.4	41.7	0.1	47.7	2.3	-0.1	1.9	-2.0	3.9	0.9	8.5
07113: Service and repairs of motorised vehicles	1.1	28.4	26.3	2.1	0.0	83.9	2.7	1.3	2.4	-3.2		1.8	8.8

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Table B.13. Price-setting moments by expenditure item (continued)

	Weight	f	f^+	f^-	f^s	$\frac{f^+}{f}$	$\lvert\Delta p\rvert$	Δp	Δp^+	Δp^-	$\lvert\Delta p^s\rvert$	sd($\lvert\Delta p\rvert$)	Kur(z)
07128: Bicycle maintenance	0.1	3.3	2.7	0.6	0.3	84.4	14.5	8.3	13.8	-16.0	24.8	8.0	1.6
07131: Parking fees	0.1	2.8	2.2	0.6	0.1	68.7	25.8	5.1	22.2	-32.9		16.5	2.4
07137: Rent of permanent parking spaces	0.1	1.4	1.2	0.2	0.0	77.4	6.7	0.9	5.6	-9.4		3.5	2.5
07140: Taxes for private vehicles and driving school	0.1	5.8	2.4	3.4	5.7	48.7	15.0	-2.6	12.1	-17.5	20.4	6.2	1.5
07226: Public transport abroad	0.0	66.8	34.8	32.0	6.6	52.1	22.0	0.9	21.4	-22.0	19.7	18.8	3.9
07320: Taxi	0.1	9.0	7.7	1.3	0.0	80.8	7.3	5.2	7.5	-4.5		3.1	1.8
07500: Passenger transport by ship	0.0	100.0	27.8	72.2	0.0	27.8	2.5	-1.2	2.4	-2.6			
08006: Telecommunication equipment	0.2	35.9	15.0	20.9	5.5	42.9	10.5	-0.4	11.7	-9.3	18.0	9.3	3.7
08016: Landline telephony	0.9	32.0	23.4	8.6	0.0	73.0	0.7	0.5	0.8	-0.2			
08018: Mobile communication	1.3	6.5	3.7	2.8	0.0	47.7	11.2	-1.8	10.5	-12.7		6.6	2.1
08020: Internet	0.5	10.7	2.5	8.2	0.0	23.5	4.6	-4.4	0.3	-5.9			
08022: Landline telephony, small service package	0.0	4.9	3.4	1.6	0.0	75.5	6.1	-0.8	3.5	-14.0		1.0	4.2
08024: Landline telephony, medium service package	0.0	5.0	1.9	3.1	0.0	55.7	15.0	-4.4	9.5	-21.9		3.1	4.1
08026: Landline telephony, large service package	0.0	5.2	1.7	3.5	0.0	50.3	23.2	-7.8	14.5	-30.0		3.0	3.0
08034: Bundled products landline Internet	0.5	2.2	1.7	0.5	0.0	55.8	11.3	-5.8	4.9	-19.3		0.0	
08036: Mobile network communication, small service bundle	0.3	3.7	2.7	1.0	0.0	73.5	11.2	2.2	9.4	-16.4		4.8	1.5
08038: Mobile network communication, medium service bundle	0.3	6.9	5.7	1.3	0.0	79.9	7.5	5.5	8.9	-3.9		5.2	2.1
08040: Mobile network communication, large service bundle	0.3	7.0	5.7	1.3	0.0	75.6	8.1	2.9	7.7	-8.0		4.1	3.2
08042: Fixed-line communication	0.7	3.4	2.1	1.3	0.0	61.1	12.2	-2.1	8.1	-18.2		3.0	1.6

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Table B.13. Price-setting moments by expenditure item (continued)

	Weight	f	f^+	f^-	f^s	$\frac{f^+}{f}$	$\lvert\Delta p\rvert$	Δp	Δp^+	Δp^-	$\lvert\Delta p^s\rvert$	sd($\lvert\Delta p\rvert$)	Kur(z)
08045: Combined offers for fixed-line and mobile communication	1.2	4.0	2.8	1.2	0.0	64.3	8.9	1.4	8.4	-10.4		2.9	1.8
08046: 3-in-1 combo offer	0.5	2.3	1.3	1.0	0.0	43.3	8.7	1.8	11.5	-6.0		4.1	1.7
08048: 4-in-1 combo offer	0.5	3.7	2.4	1.3	0.0	43.6	8.8	-1.4	9.7	-11.1		15.2	3.8
09003: Television sets	0.2	27.0	10.4	16.6	7.2	37.1	14.7	-3.1	15.3	-14.1	21.0	11.4	4.0
09013: Audiovisual appliances	0.1	22.2	10.1	12.1	4.3	44.2	13.7	-1.5	13.6	-13.2	24.2	10.6	3.3
09029: Photographic, cinematographic equipment and optical instruments	0.1	29.4	12.5	17.0	7.4	40.3	11.0	-1.8	11.7	-10.2	16.1	8.2	3.7
09048: Personal computers	0.3	44.0	18.6	25.4	3.1	41.9	7.8	-1.5	7.8	-8.1	17.1	7.9	4.1
09055: IT peripherical devices and accessories	0.2	43.5	21.9	21.6	2.5	50.6	7.4	0.2	7.4	-7.0	19.8	6.9	3.7
09064: Computer software	0.0	34.5	16.4	18.1	2.1	48.1	9.2	-0.7	8.6	-9.4	26.7	8.9	3.1
09085: Storage devices and contents	0.2	27.4	12.7	14.7	1.7	46.0	10.2	-1.5	9.4	-10.0	26.9	8.5	2.1
09090: Downloads	0.0	40.1	17.9	22.2	0.0	44.8	2.8	-0.1	3.2	-3.0		3.0	1.3
09093: Unused data carriers	0.0	31.3	15.7	15.7	4.3	50.3	13.5	0.3	13.3	-13.9	33.2	12.8	2.9
09120: Radio and TV repair and installation	0.0	5.7	3.8	1.8	0.0	70.9	13.5	4.5	13.2	-16.0		9.2	1.7
09200: Musical instruments	0.1	26.0	13.5	12.5	1.9	54.9	6.1	0.0	5.7	-6.9	12.7	4.9	3.1
09211: Games, toys and hobbies	0.4	12.5	5.7	6.8	1.5	48.5	15.1	-1.8	14.0	-16.4	34.4	11.1	2.2
09216: Game consoles and electronic games	0.0	76.4	34.1	42.2	2.7	45.7	9.8	-0.3	9.4	-8.5	12.1	6.6	2.1
09217: Parlour games	0.0	10.1	5.3	4.8	1.5	52.2	11.7	-0.5	10.4	-12.2	18.9	8.8	3.2
09218: Toys	0.3	9.4	4.8	4.6	3.2	51.1	14.2	-0.2	13.5	-14.6	24.2	10.8	2.6
09231: Winter sports equipment	0.2	16.9	8.0	8.9	17.8	45.0	21.6	-1.9	20.6	-19.0	26.4	13.2	2.5
09245: Services for winter sports equipment	0.0	3.3	1.9	1.4	0.9	55.8	12.7	2.0	12.3	-12.4	16.0	5.7	1.3
09250: Summer/year-round sports articles	0.2	8.0	3.9	4.1	6.8	48.2	19.5	-1.6	18.4	-19.7	28.2	12.8	2.4

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Table B.13. Price-setting moments by expenditure item (continued)

	Weight	f	f^+	f^-	f^s	$\frac{f^+}{f}$	$\lvert\Delta p\rvert$	Δp	Δp^+	Δp^-	$\lvert\Delta p^s\rvert$	sd($\lvert\Delta p\rvert$)	Kur(z)
09252: Camping and outdoor articles	0.1	11.7	5.9	5.8	8.6	48.5	20.5	-1.3	20.5	-21.0	27.3	13.1	2.0
09300: Plants, flowers and garden products	0.5	8.0	4.2	3.8	4.3	53.0	19.4	0.3	18.9	-20.5	29.4	14.5	3.7
09304: Garden products	0.1	6.2	3.9	2.3	1.2	59.6	12.9	2.1	12.7	-14.0	28.4	10.2	1.5
09305: Plants and flowers	0.4	11.9	6.5	5.4	4.2	54.9	18.0	1.2	17.6	-18.5	31.3	12.9	2.1
09320: Pet related products	0.3	23.3	12.3	11.0	1.4	53.1	6.6	0.1	6.2	-6.9	22.1	6.8	5.6
09340: Veterinary services for pets	0.2	12.5	11.9	0.6	0.0	94.2	4.9	3.6	4.6	-8.9		3.6	2.7
09352: Sporting events	0.0	21.7	13.0	8.6	0.3	62.8	18.5	2.4	16.4	-21.5	22.5	10.0	3.0
09400: Admission to sport facilities	0.7	7.1	6.3	0.8	0.2	86.8	11.5	7.4	11.0	-16.1		4.4	2.6
09420: Mountain railways, ski lifts	0.2	30.9	23.8	7.1	0.0	79.7	9.1	2.1	7.4	-14.6		6.7	4.6
09436: Cinema	0.1	4.2	3.5	0.7	0.0	80.7	8.0	3.8	7.3	-10.7	26.2	3.9	2.6
09450: Theatre and concerts	0.3	9.2	6.3	2.8	0.0	73.3	9.2	2.8	8.2	-12.1		6.9	3.8
09463: Museums and zoos	0.1	16.5	13.8	2.8	0.2	84.7	15.8	11.7	16.6	-13.4	25.5	5.3	1.9
09469: Reception of paid audio-visual content	0.2	3.0	2.0	1.0	0.2	66.5	19.9	6.8	20.5	-18.6	86.9	13.4	1.3
09475: Photographic services	0.1	11.4	6.0	5.4	7.2	54.9	23.9	1.6	22.7	-24.0	24.3	7.4	2.4
09490: Leisure-time courses	0.7	15.7	10.9	4.8	0.1	71.0	20.1	3.1	17.7	-31.4	22.3	22.2	7.1
09526: Daily and periodical purchased individually	0.1	11.2	9.1	2.1	0.0	83.0	8.3	5.5	8.4	-9.1		4.6	2.5
09535: Daily and periodical subscriptions	0.4	17.0	14.3	2.7	0.7	81.5	6.0	2.8	5.5	-8.7	19.6	3.8	2.8
09545: Other printed matter	0.1	4.5	2.7	1.7	2.5	58.7	15.9	-0.3	13.0	-16.8	59.0	11.4	2.1
09555: Writing and drawing materials	0.1	8.5	5.5	3.0	1.2	60.0	7.1	1.2	7.0	-7.5	24.0	7.8	3.7
09570: International package holidays	2.2	43.4	22.5	20.9	0.3	55.3	12.9	0.3	12.3	-13.6	18.7	10.5	4.9
10041: Compulsory education	0.2	20.4	20.0	0.3	0.0	98.6	4.0	3.9	4.0	-1.9		2.3	5.9

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Table B.13. Price-setting moments by expenditure item (continued)

	Weight	f	f^+	f^-	f^s	$\frac{f^+}{f}$	$\lvert\Delta p\rvert$	Δp	Δp^+	Δp^-	$\lvert\Delta p^s\rvert$	sd($\lvert\Delta p\rvert$)	Kur(z)
10060: Post-compulsory education	0.1	18.9	17.6	1.3	0.0	91.7	4.4	3.9	4.6	-2.4		4.1	4.0
10070: Higher vocational education and universities	0.4	8.0	7.0	1.0	0.0	89.8	17.7	15.8	19.4	-8.7		26.0	3.9
10100: Life-long learning	0.1	8.5	6.5	2.0	0.1	73.3	19.8	4.8	17.4	-26.4	48.5	19.4	4.7
11003: Meals taken in restaurants and cafes	3.3	3.6	2.6	1.0	0.0	72.0	8.0	2.6	7.4	-9.3	32.9	4.6	1.8
11052: Wine	0.6	3.7	2.7	1.0	0.0	70.7	9.7	1.7	8.1	-13.9	26.2	6.3	1.5
11070: Beer	0.3	2.4	2.1	0.3	0.0	83.2	7.5	4.2	7.0	-9.5	31.6	4.3	1.5
11075: Spirits, other alcoholic drinks	0.1	1.5	1.2	0.3	0.0	79.6	10.1	5.1	9.6	-12.0		5.4	1.4
11091: Coffee and tea	0.5	2.6	2.3	0.3	0.0	82.5	5.8	3.4	5.6	-7.5	7.7	3.3	1.6
11103: Mineral water and soft drinks	0.5	2.2	1.9	0.3	0.0	83.0	7.6	3.9	6.9	-10.2		4.4	1.6
11110: Self-service restaurants	0.4	8.1	6.6	1.5	0.0	77.1	6.8	2.9	6.5	-8.0		3.9	2.4
11120: Other non-alcoholic beverages	0.0	2.2	1.7	0.5	0.0	74.6	8.0	2.8	7.3	-10.2		3.7	1.7
11130: Fast food meals	1.1	3.1	2.3	0.8	0.7	71.5	11.4	2.8	9.9	-14.1	29.1	5.8	1.7
11140: Fast food non-alcoholic beverages	0.1	2.1	1.8	0.3	0.0	80.0	9.2	4.8	8.7	-11.7		4.1	1.6
11145: Fast food alcoholic beverages	0.0	1.4	1.1	0.3	0.0	75.3	12.3	4.2	10.9	-16.5	22.3	4.6	1.1
11151: Meals in canteens	0.5	4.4	3.6	0.7	0.0	80.9	8.7	5.2	8.6	-8.9		4.6	2.6
11160: Beverages in canteens	0.1	3.1	2.3	0.8	0.0	70.7	13.9	3.6	12.0	-18.5		10.2	2.0
11171: Hotels	1.1	48.9	24.6	24.3	0.0	48.9	16.1	-0.5	14.9	-15.4	26.7	11.8	4.2
11190: Supplementary accommodation	0.4	47.0	25.0	22.0	2.5	53.3	12.5	0.4	10.6	-11.8	18.2	7.9	6.8
12002: Men's and children's hairdressers	0.1	4.0	3.4	0.6	0.0	78.6	6.9	2.4	5.8	-9.9		3.6	1.5
12003: Hairdresser and beauty salon services	0.9	6.5	5.9	0.6	0.1	89.2	6.5	4.2	6.0	-9.3	19.1	4.3	2.3

Continued on next page

Table B.13. Price-setting moments by expenditure item (continued)

	Weight	f	f^+	f^-	f^s	$\frac{f^+}{f}$	$\lvert\Delta p\rvert$	Δp	Δp^+	Δp^-	$\lvert\Delta p^s\rvert$	sd($\lvert\Delta p\rvert$)	Kur(z)
12004: Women's hairdressers	0.4	5.4	4.9	0.5	0.0	88.5	4.8	3.1	4.4	-7.6		3.6	2.0
12010: Cosmetic treatment	0.3	5.1	4.4	0.7	0.1	83.1	9.2	4.7	8.5	-12.8	22.0	4.5	1.4
12023: Soaps and foam baths	0.1	14.5	7.6	6.8	1.7	53.1	9.9	0.3	9.6	-10.3	24.8	9.6	4.0
12040: Hair-care products	0.1	16.9	8.7	8.2	2.7	51.5	9.5	0.1	9.2	-9.7	25.5	9.9	4.1
12055: Dental-care products	0.1	16.9	9.0	7.9	3.0	53.3	8.0	0.3	7.8	-8.7	22.1	8.4	4.2
12070: Beauty products and cosmetics	0.6	13.3	7.0	6.4	1.9	53.4	9.3	0.4	9.2	-9.7	25.7	9.3	3.3
12085: Products for personal care	0.2	22.9	11.8	11.0	4.7	51.5	10.4	0.1	10.1	-10.8	22.5	10.6	4.9
12088: Products for face care and make-up	0.2	22.7	11.6	11.1	3.4	51.2	10.8	-0.0	10.4	-10.8	23.0	10.5	4.9
12100: Paper articles for personal hygiene	0.2	18.9	9.6	9.3	2.1	51.6	9.8	0.2	9.6	-9.7	29.8	10.3	3.2
12129: Personal care appliances	0.1	7.9	3.9	3.9	3.0	50.6	12.4	0.1	12.9	-12.7	29.5	9.9	1.7
12130: Non-electrical appliances for personal care	0.1	18.7	9.7	9.1	1.1	50.7	4.7	-0.0	4.7	-4.9	19.2	5.3	3.2
12140: Jewellery	0.2	11.6	6.5	5.1	5.0	53.6	30.1	0.6	28.9	-31.9	50.4	22.4	1.4
12150: Electrical appliances for personal care	0.1	27.6	13.3	14.2	8.1	47.7	13.8	-0.7	13.8	-13.8	25.2	12.2	3.3
12161: Watches	0.3	2.7	1.7	1.0	0.5	55.8	15.1	1.2	14.2	-16.4	38.9	7.2	2.9
12170: Luggage, bags and accessories	0.3	8.1	4.4	3.7	4.0	54.5	17.5	0.2	16.3	-18.6	32.3	11.9	1.9
12190: Social protection services	0.7	12.7	10.5	2.1	0.0	78.7	7.7	2.7	6.5	-10.6		7.7	1.7
12501: Household insurance (including private third-party insurance)	0.4	3.1	2.1	1.0	0.0	64.8	4.3	0.3	3.5	-5.5		3.7	3.5
12520: Car insurance	0.5	5.4	4.3	1.1	0.0	79.2	4.0	2.5	3.9	-3.6		2.1	2.3
12531: Financial services	0.3	41.7	19.8	21.9	0.0	47.3	4.6	1.6	7.2	-2.9		5.9	3.3
12534: Bank account fees	0.2	4.8	3.0	1.8	0.0	62.8	18.7	-6.0	9.8	-30.5		13.8	1.4
12536: Fees for securities accounts	0.3	22.4	17.6	4.8	0.0	66.0	4.1	1.5	4.3	-4.3		4.1	2.1

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Table B.13. Price-setting moments by expenditure item (continued)

	Weight	f	f^+	f^-	f^s	$\frac{f^+}{f}$	$\lvert\Delta p\rvert$	Δp	Δp^+	Δp^-	$\lvert\Delta p^s\rvert$	sd($\lvert\Delta p\rvert$)	Kur(z)
12541: Other Services	0.3	6.3	4.2	2.1	0.0	60.2	14.0	3.7	14.3	-10.9		7.3	4.5
12543: Official documents	0.1	2.0	1.2	0.8	0.0	68.3	11.6	6.5	12.5	-7.7		16.1	1.0
12547: Services of lawyers	0.1	71.6	71.6	0.0	0.0	100.0	2.1	2.1	2.1				
12549: Advertisements	0.1	10.0	7.5	2.4	0.0	68.1	21.4	6.9	26.2	-19.8		11.3	2.0

Notes: Average price-setting moments by expenditure item for the Swiss CPI microdata sample from January 2008 to December 2025, including price changes due to temporary sales and product substitutions. Expenditure items correspond to the COICOP five-digit subclasses. The frequency measures are weighted averages of variety-level shares of price changes, increases, decreases, and sales-related price changes, respectively. "Share of increases" is the share of price increases in all non-zero price changes. The size measures are weighted averages of the mean log price change ("Average"), the mean absolute log price change ("Absolute"), the mean size of price increases and decreases, the mean absolute size of sales-related price changes, the standard deviation of absolute log price changes, and the kurtosis of standardized price changes. "Weight" is the average CPI expenditure weight over the sample period, in percent. All moments are first computed at the variety level and then aggregated as a weighted mean across varieties using CPI expenditure weights. Values are reported in percent per month.

B.7 *Regional heterogeneity in price-setting moments*

Table B.14 summarizes average price-setting moments for the seven NUTS-2 regions of Switzerland.

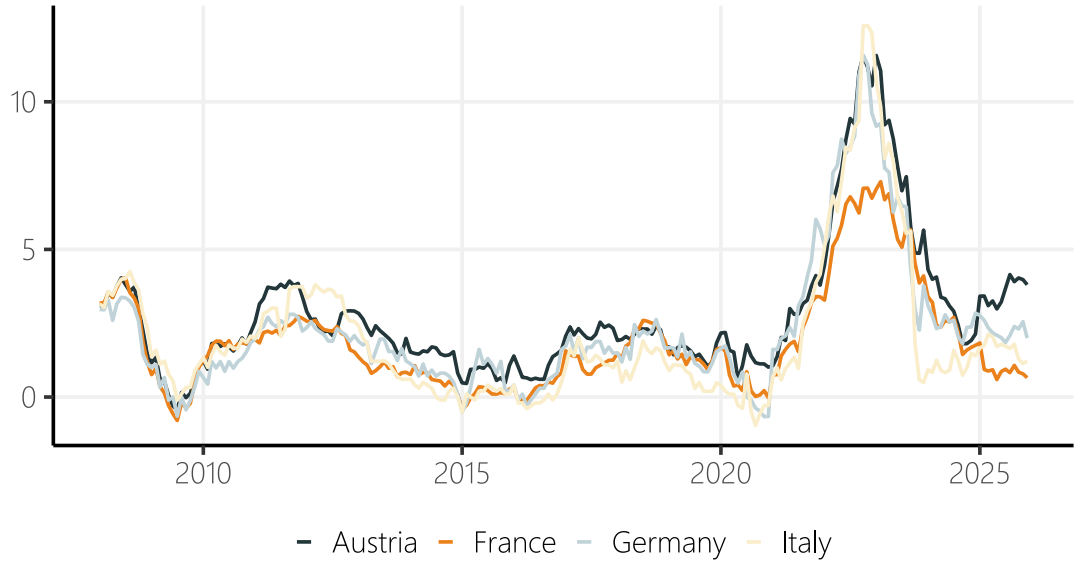
Table B.14. Regional price-setting moments

		Frequency of price adjustments					Size of price adjustments						
	Weight	Changes	Increases	Decreases	Sales	Share of Increases	Absolute Changes	Average Changes	Increases	Decreases	Sales	Std. dev.	Kurtosis
		f	f^+	f^-	f^s	$\frac{f^+}{f}$	$\lvert\Delta p\rvert$	Δp	Δp^+	Δp^-	$\lvert\Delta p^s\rvert$	sd($\lvert\Delta p\rvert$)	Kur(z)
Berne	37.7	22.8	12.1	10.8	3.3	53.7	12.1	0.1	11.2	-12.3	29.6	6.2	1.9
Bâle	36.8	21.7	11.5	10.2	2.3	54.6	10.4	0.4	9.5	-10.3	27.7	5.3	2.1
Coire	31.3	17.6	9.5	8.0	2.2	55.9	12.5	0.5	11.4	-13.2	31.0	4.8	1.7
Genève	36.0	25.4	13.4	12.0	4.0	54.4	11.2	0.3	10.2	-11.3	26.6	5.2	1.9
Lausanne	34.9	23.3	12.2	11.1	2.5	53.5	10.1	0.3	9.5	-10.0	29.2	5.1	1.8
Lucerne	31.4	22.5	11.9	10.6	2.3	53.6	10.1	0.2	9.5	-10.3	30.0	4.9	1.7
Lugano	30.7	24.8	13.0	11.8	2.3	52.4	9.9	0.1	9.4	-9.9	29.9	5.6	1.6
Neuchâtel	30.8	23.4	12.5	10.9	1.6	54.5	8.9	0.4	8.4	-9.1	29.5	4.7	1.5
Sion	32.1	23.9	12.5	11.4	2.2	53.0	9.9	0.3	9.3	-9.8	30.4	4.6	1.5
St-Gall	35.9	23.0	12.3	10.8	2.2	54.5	9.9	0.4	9.3	-10.1	27.2	5.5	1.8
Zurich	37.4	22.2	11.8	10.4	2.1	54.9	10.6	0.4	9.8	-10.6	27.8	5.8	2.0

Notes: Average price-setting moments by price-collection region for the Swiss CPI microdata sample from January 2008 to December 2025, including price changes due to temporary sales and product substitutions. The frequency measures are weighted averages of variety-level shares of price changes, increases, decreases, and sales-related price changes, respectively. "Share of increases" is the share of price increases in all non-zero price changes. The size measures are weighted averages of the mean log price change ("Average"), the mean absolute log price change ("Absolute"), the mean size of price increases and decreases, the mean absolute size of sales-related price changes, the standard deviation of absolute log price changes, and the kurtosis of standardized price changes. "Weight" is the average CPI expenditure weight over the sample period, in percent. All moments are first computed at the variety level and then aggregated as a weighted mean across varieties using CPI expenditure weights. Values are reported in percent per month.

In order to investigate whether regional heterogeneity in cross-border economic linkages shapes price-setting behavior within Switzerland, we construct a continuous measure of each region's exposure to inflation developments in neighboring countries. Inflation in France, Germany, Italy, and Austria often evolves quite differently over time, and such variation can plausibly generate spatially heterogeneous inflationary environments for Swiss firms. Figure B.2 shows the monthly HICP inflation rates of the four neighboring countries over the period 2008–2025. Average inflation rates over this period amount to 1.86% in France, 2.24% in Germany, 2.01% in Italy, and 2.76% in Austria.

Figure B.2. Monthly HICP inflation rates in neighboring countries, 2008–2025



Notes: Monthly HICP inflation rates for France, Germany, Italy, and Austria from January 2008 to December 2025. All series are sourced from Eurostat. Values are reported in percent per month.

To quantify these differences, we begin by computing for each Swiss region the shortest driving distance to the nearest border town in each neighboring country. This measure captures economically relevant proximity because it reflects the ease with which consumers and firms can interact across borders, engage in cross-border shopping, and respond to foreign competitive conditions. Table B.15 shows the resulting distance matrix, measured in kilometers.

Table B.15. Driving distance from Swiss regions to neighboring countries

Region	France	Germany	Italy	Austria
Berne	105	102	208	240
Bâle	4	18	289	206
Coire	210	202	168	57
Genève	10	255	132	395
Lausanne	50	204	146	345
Lucerne	104	101	191	181
Lugano	271	284	25	234
Neuchâtel	53	132	214	273
Sion	158	252	103	392
St-Gall	174	46	270	38
Zurich	98	37	228	122

Notes: Distance matrix $d_{r,c}$ used to construct region-specific neighbor weights $w_{r,c}$. For each Swiss region r and neighboring country $c \in \{\text{France, Germany, Italy, Austria}\}$, $d_{r,c}$ is the shortest driving distance (in kilometers) from the center of region r to the nearest town across the Swiss border in country c.

Using these distances, we assign to each Swiss region r and neighboring country c a weight

$$w_{r,c} = \frac{d_{r,c}^{-1}}{\sum_j d_{r,j}^{-1}}, \tag{15}$$

so that nearer countries receive greater influence. Combining these weights with monthly country-specific HICP inflation rates $\pi_{c,t}$ yields a time-varying exposure index,

$$\text{Exposure}_{r,t} = \sum_c w_{r,c}\, \pi_{c,t}, \tag{16}$$

which captures the foreign inflationary environment confronting each Swiss region at each point in time.

To examine whether differences in proximity to foreign inflation translate into systematic differences in firms' pricing behavior, we construct monthly regional moments of price adjustment from the micro price dataset: the overall frequency of price changes, the frequencies of price increases and of price decreases, and the corresponding measures that exclude sales. These regional moments serve as dependent variables in a panel regression of the form

$$y_{r,t} = \alpha_r + \delta_t + \beta \, \text{Exposure}_{r,t} + \gamma' X_{r,t} + \varepsilon_{r,t}, \tag{17}$$

where region fixed effects absorb all persistent regional characteristics, time fixed effects control for common macroeconomic shocks, and identification derives from the interaction of time-varying foreign inflation with fixed differences in regional proximity to each neighbor.

The estimates in Table B.16 reveal a clear and economically meaningful relationship between foreign inflation exposure and domestic price-setting behavior. The coefficient on the exposure index is positive and highly significant for the overall frequency of price changes. A coefficient of approximately 0.7 implies that when the weighted inflation exposure rises by one percentage point, the monthly frequency of price adjustments in the corresponding Swiss region increases by roughly 0.7 percentage points. The increase in frequency is driven primarily by upward price revisions. By contrast, the estimated effects on the size of individual price changes, both overall and separately for increases and decreases, are not statistically significant. This finding indicates that firms located in regions more strongly affected by inflation in nearby foreign markets adjust their prices more frequently. Since region and time fixed effects absorb, respectively, stable cross-regional differences and Switzerland-wide inflationary shocks, the estimated response reflects a genuine behavioral adjustment to the specific pattern of inflation developments across borders.

Table B.16. Effect of foreign inflation exposure on regional price-setting behavior

	Dependent variable					
	f	f^+	f^-	$\lvert\Delta p\rvert$	Δp^+	Δp^-
Exposure	0.701^{***}	0.468^{***}	0.233^{**}	-0.009	-0.064	0.043
	(0.158)	(0.123)	(0.109)	(0.113)	(0.139)	(0.161)
Observations	2,376	2,376	2,376	2,376	2,376	2,376
R^2	0.627	0.877	0.875	0.396	0.528	0.562
Adjusted R^2	0.588	0.864	0.862	0.332	0.478	0.515
F Statistic (df = 216; 2149)	16.736^{***}	70.788^{***}	69.702^{***}	6.523^{***}	11.117^{***}	12.744^{***}

Notes: Panel OLS estimates of the effect of foreign inflation exposure on regional price-setting moments. The dependent variables are the regional monthly frequency of price changes (f), frequency of price increases (f^+), frequency of price decreases (f^-), absolute size of price changes ($|\Delta p|$), size of price increases (Δp^+), and absolute size of price decreases ($|\Delta p^-|$). The exposure variable is the inverse-distance-weighted average of monthly HICP inflation rates in France, Germany, Italy, and Austria, with weights proportional to the inverse of the driving distance from each Swiss region's center to the nearest border crossing of the respective neighbor country (see Table B.15). All specifications include region and time fixed effects. Standard errors (in parentheses) are clustered at the region level. Statistical significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

C. TIME-SERIES PRICE-SETTING BEHAVIOR

This appendix refers to Section 3.3 and presents additional figures and tables on the time-series evolution of price-setting behavior, including evidence on seasonality, robustness of trends, and the analysis of price setting before and during the pandemic.

C.1 *Cross-sectional distributions of additional price-setting moments over time*

The temporal evolution of both the frequency and the size of price changes is illustrated in Figure 1 of the main text. To further examine how these dimensions evolve over time, Figure C.1 reports the cross-sectional distributions of additional price-setting moments. In particular, the top row shows the frequencies of price increases and decreases, the middle row displays the corresponding sizes, and the bottom row presents the frequency and size of sales-related price changes.

Notably, the trend in the frequency of price changes reflects equal contributions from both price increases and decreases. By contrast, the size of price changes shows no significant trend, with the sizes of both increases and decreases remaining relatively stable over time.

C.2 *Seasonality in price setting*

Using variety-level monthly frequencies and sizes of price adjustments over time, we study seasonal patterns in price setting in Switzerland. To this end, we follow Gautier et al. (2024) and estimate weighted panel OLS regressions of both the frequency and absolute size of price increases and decreases on month fixed effects, additionally controlling for year and variety fixed effects. Figure C.2 plots the resulting coefficients and their confidence intervals.

Figure C.1. Distribution of additional price-setting moments across varieties over time

Notes: Cross-sectional distribution of price-change moments across varieties in Swiss CPI micro-data over time. The top row reports the frequency of price increases and decreases, the middle row their corresponding sizes, and the bottom row the frequency and size of sales-related price changes. The sample spans January 2008 to December 2025 and includes price changes due to temporary sales and product substitutions. Each panel displays the mean, the median, the interquartile range (dark-shaded areas), and the 15th–85th percentile range (light-shaded areas). Moments are reported in percent per month.

Figure C.2. Seasonality in the frequency and size of price changes

Notes: Coefficient plots from weighted panel regressions of the monthly frequency (top row) and absolute size (bottom row) of price changes at the variety level on month fixed effects. Left-hand panels show results including temporary sales; right-hand panels exclude price changes associated with sales and promotions. All regressions control for variety and year fixed effects and use product-level expenditure weights. The dependent variables are separately estimated for price increases and price decreases. The base month is January. Vertical bars indicate 95% confidence intervals.

Both the frequency and the size of price changes exhibit marked and statistically significant seasonal movements. Seasonality is particularly pronounced for price increases, whereas price decreases show weaker and often statistically insignificant seasonal fluctuations once sales are removed.

When temporary sales are included, the estimated month effects for the frequency of price changes show substantial and highly significant seasonal variation. The frequency of price increases is elevated from February to May (up to +1.4 pp) and then drops sharply from June onward, reaching its lowest point in December (-2.7 pp). By contrast, the frequency of price decreases shows negative effects for most months early in the year (e.g., -2.5 pp in May) but essentially no meaningful seasonal spike in July.

Excluding price changes related to sales and promotions attenuates but does not eliminate these patterns. For price increases, strong and significant negative effects between June and December remain (e.g., -3.0 pp in December), indicating a persistent seasonal component in regular (non-sale) pricing. For price decreases, however, once sales are excluded, month effects are smaller in magnitude and only significant in the second half of the year. The largest positive spikes occur in October (+1.6 pp) and December (+1.5 pp), suggesting some seasonal tendency for regular price cuts towards the end of the year.

Seasonality in the absolute size of price changes is also evident but again operates primarily through sales. With sales included, the size of price increases peaks in March and September (+1.1 pp and +1.6 pp), while the size of price decreases becomes much larger in absolute value in April (+2.6 pp) and in October (+2.5 pp). These movements largely mirror the timing of seasonal promotions.

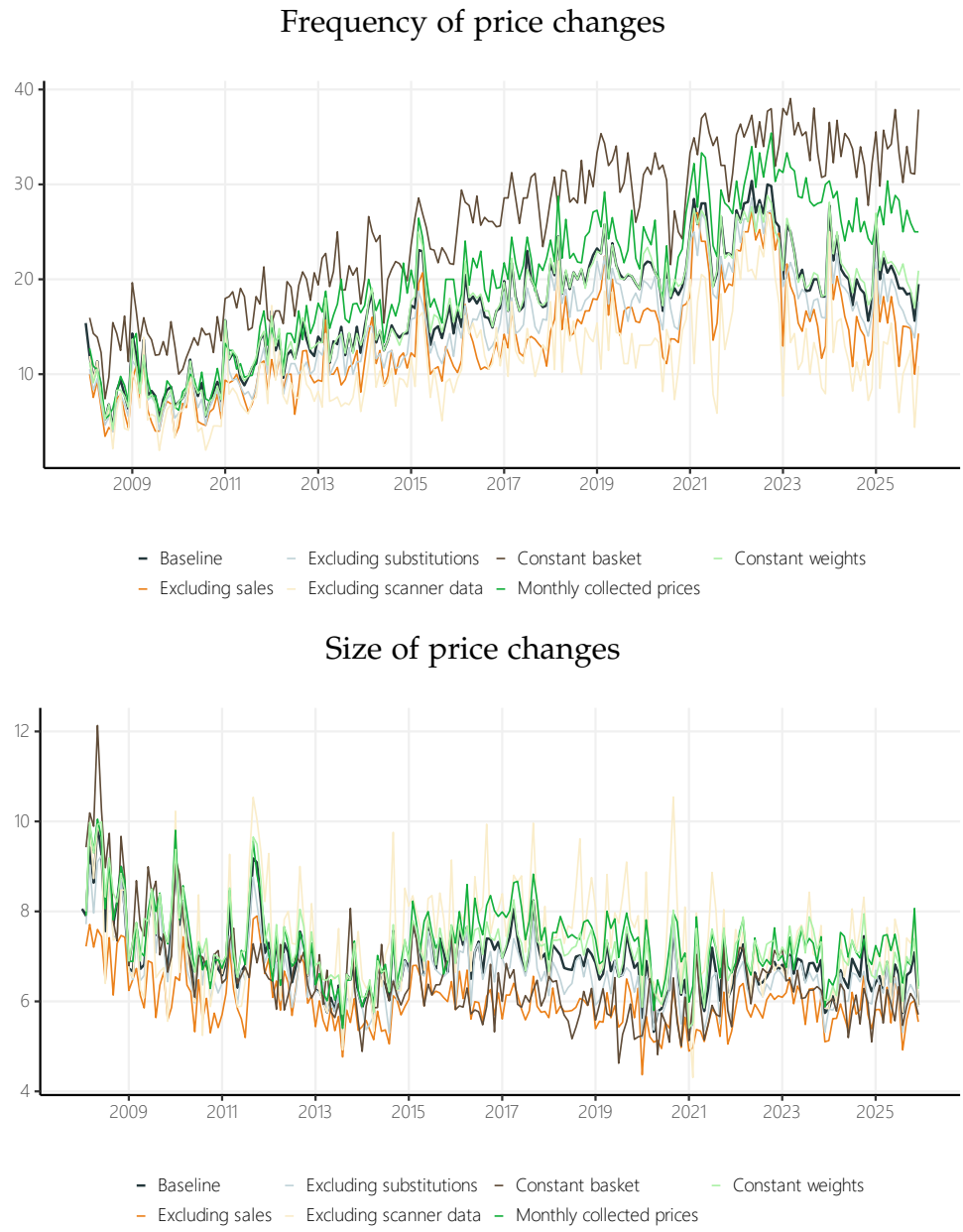
Once sales-related price changes are removed, the seasonal amplitude becomes much smaller. The size of regular price increases varies modestly across months—at most ± 0.30 pp—with only March and May showing small significant positive effects. For regular price decreases, the estimated coefficients are generally close to zero and mostly insignificant, indicating virtually no meaningful seasonality in the size of non-sale price cuts in Switzerland.

C.3 *Robustness of trends in price-setting moments*

The variations in the frequency and size of price changes over time are shown in Figure 1 in the main text. In what follows, we examine whether the results shown

in these figures are robust to alternative datasets. "Baseline" refers to the sample including temporary sales and product substitutions used in Figure 1. "Excluding sales" refers to the sample excluding price changes related to temporary sales. "Excluding substitutions" refers to the sample excluding price changes related to product substitutions. "Excluding scanner data" refers to the sample excluding items collected by scanner. Scanner data were continuously introduced in 2008, 2010, 2012, and 2016. The price of an item collected via scanner data is calculated as the unit value price during the first 14 days of the month, i.e., the ratio of sales revenue from a product to the quantity sold. To the extent that there are temporary discounts, this generates spurious price changes. The "constant basket" is based on items that are consistently part of the basket of goods and services from 2008 to 2025 (and accordingly neglects items that are introduced or discontinued during the period). "Monthly collected prices" are based on prices that have been collected at only a monthly frequency since 2008. "Constant weights" uses time-invariant CPI weights (averaged over the sample period) in the aggregation. Figure C.3 plots the median frequency (top panel) and median absolute size (bottom panel) of price changes in CPI microdata from January 2008 to December 2025 for these alternative datasets. The lines in the top panel show an upward trend, whereas the lines in the lower panel are mostly flat. Therefore, our conclusions on the trends in the frequency and absolute size of price changes are robust to the alternative datasets considered here.

Figure C.3. Sensitivity of the frequency and size of price changes to different sample compositions

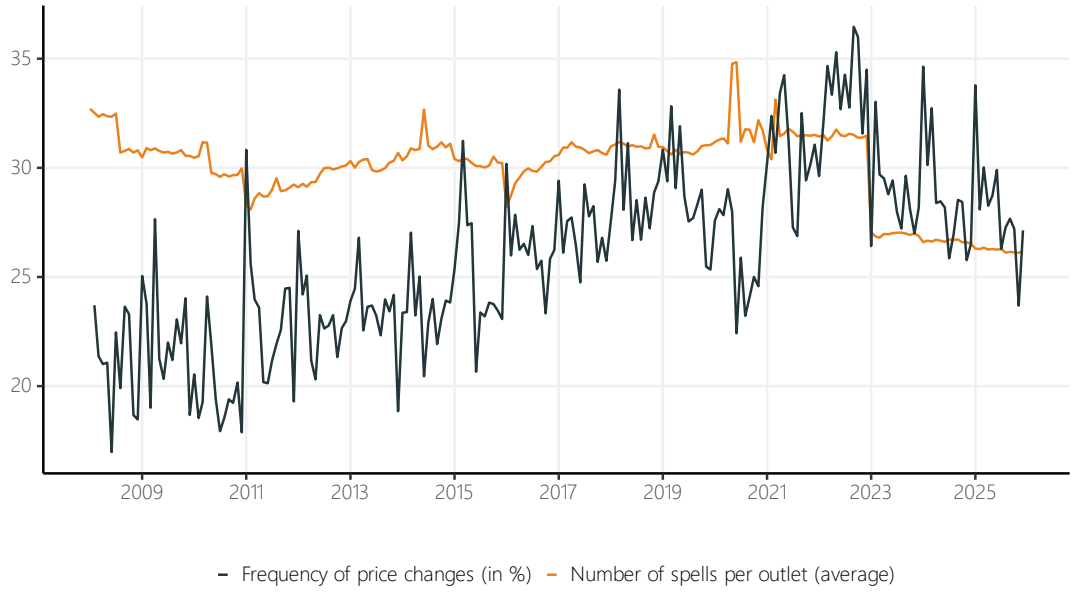


Notes: Sensitivity of the median frequency (top panel) and absolute size of price changes (bottom panel) in Swiss CPI microdata from January 2008 to December 2025 across different sample compositions. All moments are reported in percent per month.

Furthermore, we examine whether the upward trend in the frequency of price changes is related to an increase in the number of goods per outlet. Figure C.4 shows the average number of prices collected per outlet and month and the av-

erage frequency of price changes. We observe that the average number of prices collected per outlet varies little over time, while the frequency of price changes shows an upward trend. The correlation between the two series is positive but very low (Pearson correlation coefficient of +0.07). The correlation coefficient stays close to zero when calculating correlations at the level of main groups (not reported in Figure C.4).

Figure C.4. Number of spells and frequency of price changes



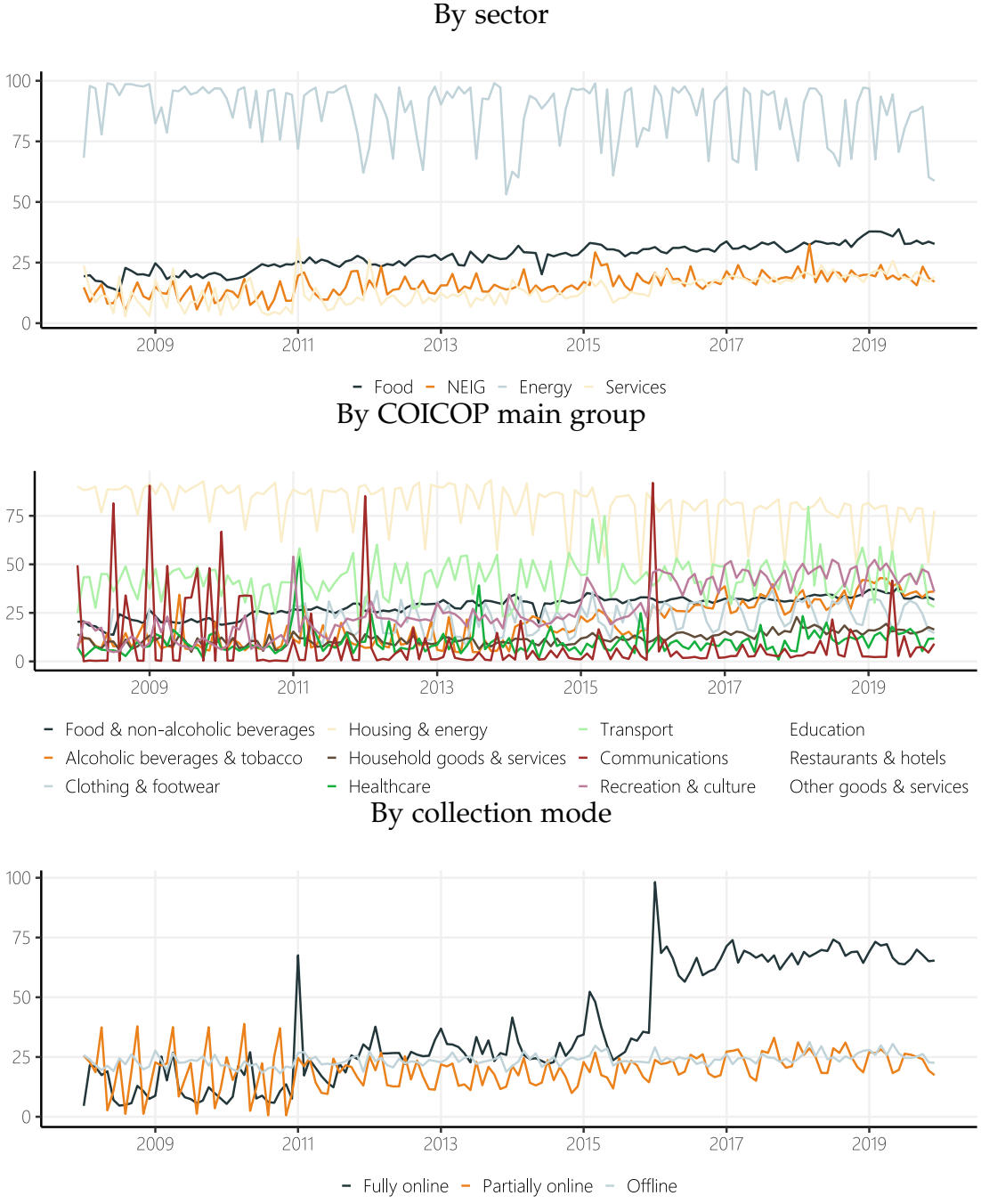
Notes: Average frequency of price changes (left axis) and average number of price spells per outlet per month (right axis) for the baseline sample from January 2008 to December 2025, including temporary sales and product substitutions.

C.4 *Price setting before the pandemic*

Figure C.5 shows the average frequency of price changes over time by sector (in the top panel), by COICOP two-digit main group (middle panel), and mode of price collection (bottom panel) using the sample that includes price changes due to temporary sales and product substitutions.

Among the four main sectors, the increase is most pronounced in food and non-energy industrial goods (NEIG). For food, the average frequency rises from 18.4 percent in 2008 to 35.3 percent in 2019. This shift is driven by food & non-alcoholic beverages, which increase from 19.2 percent to 34.6 percent, and even more so by

Figure C.5. Cross-sectional frequency of price changes over time



Notes: Monthly frequency of price changes from January 2008 to December 2025, decomposed by sector (top panel), COICOP two-digit main group (middle panel), and mode of price collection (bottom panel). All series include price changes due to temporary sales and product substitutions and are reported in percent per month.

alcoholic beverages & tobacco, which more than triple from 10.9 to 38.0 percent.

NEIG also exhibit a substantial increase—from 11.3 percent to 19.3 percent—though this masks heterogeneity across categories. The acceleration is driven mainly by household goods & services, where frequencies rise from around 10 percent in 2008 to roughly 16 percent by 2019. Other components, such as recreation & culture, show similar upward movement. By contrast, communications remains broadly stable despite year-to-year volatility, consistent with regulated pricing and slower technological cycles.

Services show a rise from 10.5 percent to 20.1 percent, but again the increase is uneven. Market-exposed services such as transport and restaurants & hotels rise notably—from 39.6 percent to 48.4 percent and 8.3 percent to 11.3 percent, respectively. By contrast, regulated services such as education and healthcare remain low and stable at around 8–12 percent, underscoring the role of institutional constraints.

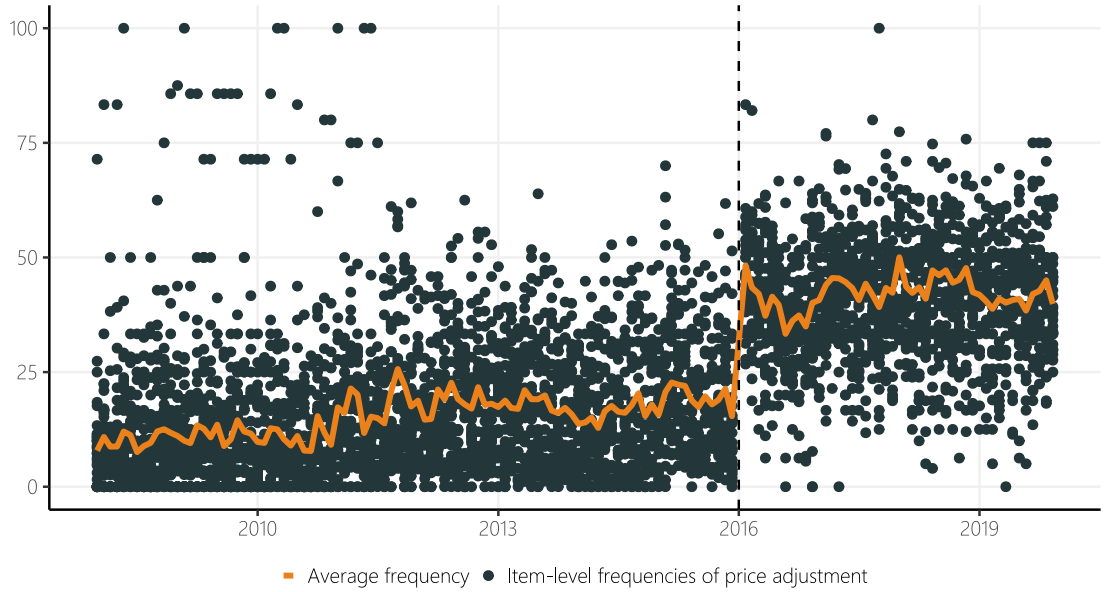
Energy prices, which are already highly flexible, decline modestly from 93.3 percent to 81.0 percent though energy-related categories under housing remain close to 90 percent, with only minor fluctuations over time.

The mode of price collection emerges as a key driver of the aggregate trend. Items collected exclusively online exhibit a dramatic increase in adjustment frequency—from 11.4 percent in 2008 to 67.9 percent in 2019—consistent with the adoption of algorithmic and dynamic pricing in e-commerce. Partially online items also increase slightly (from 17.7 percent to 23.7 percent), with a visible acceleration after 2015. By contrast, exclusively offline items remain almost unchanged, increasing only from 22.3 percent to 26.0 percent. This pattern indicates that the rise in the aggregate frequency is driven disproportionately by items increasingly collected online, rather than a uniform shift in offline pricing.

Figure C.6 illustrates the effect of the methodological change in the collection of consumer electronics prices on their frequency of price changes. With the transition to online price collection in January 2016, the frequency of price changes more than doubled. This discontinuity indicates that price-setting behavior differs greatly depending on the sales channel (online versus stationary retail).

Table C.1 complements the event-study results in Figure 2 and reports difference-in-differences estimates comparing items that transition to fully or partially online price collection with items that remain offline, for both the frequency and the size

Figure C.6. Discontinuity in the frequency of price changes for consumer electronics between prices collected in-store (before 2016) and online (since 2016)



Notes: Item-level frequencies of price adjustments of consumer electronics items. The sample ranges from January 2008 to December 2019 and includes price changes due to temporary sales and product substitutions. The prices of consumer electronics items have been collected exclusively via the internet since January 2016 (and were collected previously in regular outlets and only partially online). The frequencies are reported in percent per month.

of price changes.

Table C.1. Difference-in-differences estimates of the online price-collection switch

	Dependent variable			
	Frequency of price changes (f)		Size of price changes (s)	
	(1) Fully online	(2) Partially online	(3) Fully online	(4) Partially online
T_v	16.039***	−25.738***	2.931***	−2.712***
	(−0.070)	(0.024)	(0.002)	(−0.025)
Post_t	2.038***	2.056***	0.925***	1.096***
	(−0.193)	(−0.188)	(−0.083)	(−0.081)
$T_v \times \text{Post}_t$	24.474***	2.056***	−2.574***	−1.229***
	(1.967)	(0.826)	(0.830)	(0.114)
Constant	26.167***	26.870***	9.368***	9.254***
	(0.189)	(0.181)	(0.098)	(0.093)
Observations	13,836	15,470	13,850	15,477
R^2	0.754	0.754	0.298	0.348

Notes: Difference-in-differences estimates of the effect of the transition to online price collection on price-setting behavior, based on the specification $x_{v,t} = \alpha + \beta(T_v \times \text{Post}_t) + \lambda_v + \theta_t + \varepsilon_{v,t}$. The dependent variable is the monthly frequency of price changes (columns 1–2) or the absolute size of price changes (columns 3–4). T_v identifies treated items; Post_t is an indicator for months from January 2016 onward. Columns (1) and (3): fully online treated items (consumer electronics) versus always-offline items. Columns (2) and (4): partially online items versus always-offline items. All specifications include item fixed effects and month-by-year fixed effects. Standard errors, clustered at the item level, are reported in parentheses. Statistical significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

C.5 *Price setting during the pandemic*

Figure C.7 shows the frequency of price increases (in the top left panel) and price decreases (in the bottom left panel), and the absolute size of price increases (in the top right panel) and absolute price decreases (in the bottom right panel) during the pandemic from January 2020 to December 2023.

To gain insight into the cross-sectional heterogeneity of the response of price-setting behavior to the COVID-19 shock, we examine the frequency and the size of price changes across sectors. Figure C.8 shows the frequency of price changes for food, NEIG, and services, again for all price changes (in the top row) and then separately for price increases (in the middle row) and price decreases (in the bottom row).

For food items, the frequency of price changes in 2020 did not deviate much from

Figure C.7. Frequency and size of price changes, increases, and decreases during the pandemic

Notes: This figure shows the frequency of price increases (in the top left panel) and price decreases (in the bottom left panel), and the absolute size of price increases (in the top right panel) and absolute price decreases (in the bottom right panel) during the pandemic from January 2020 to December 2023. The shaded areas show the mean of the respective measures from January 2018 to December 2019 and the dispersion measured as the standard deviation around the mean (resulting in two-standard-deviation bands). The sample includes temporary sales and product substitutions but excludes COVID imputations. All moments are reported in percent per month.

the average of the previous two years. However, distinguishing between price increases and decreases reveals that the frequency of price increases increased, and the frequency of price decreases decreased, suggesting a response of retail food pricing to the excess demand during the pandemic, particularly in the spring of 2020 (see Figure 3). In 2021 and 2022, the frequency of price changes increased significantly, driven by more frequent price increases. The frequency of price increases peaked at 25.6 percent in May 2022, exceeding its pre-pandemic average by 8.4 percentage points.

In the case of NEIG, retailers changed their prices at a similar frequency in 2020 as in the two years prior to the pandemic. In 2021 and 2022, the frequency of

price increases contributed to the rise in the overall frequency of price changes. In April 2022, the frequency of price changes reached 23.1 percent, with price increases occurring more than twice as often as the pre-pandemic average.

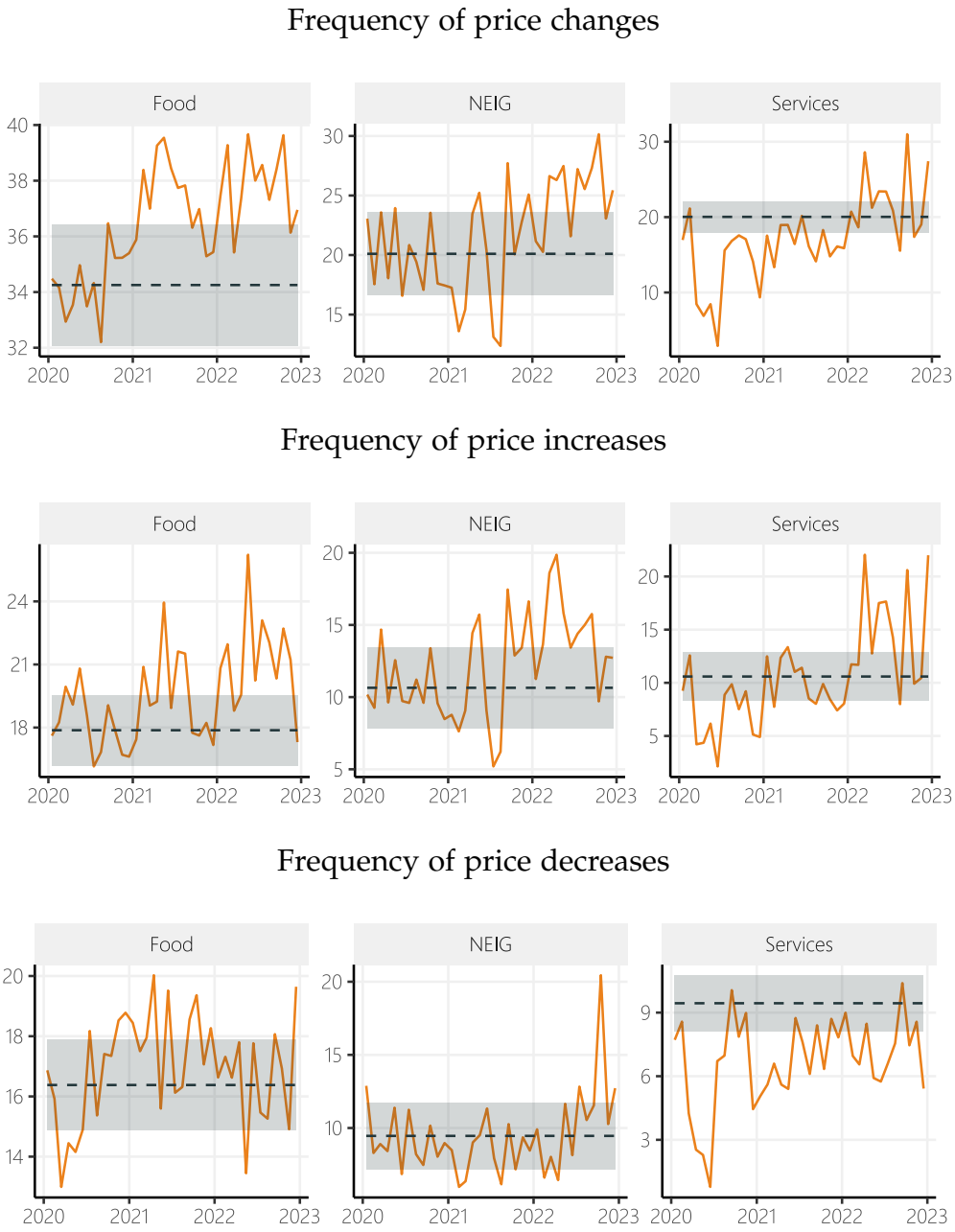
In services, where the decline in demand resulting from the various containment measures was most severe and prolonged, the frequency of price changes dropped significantly. The largest declines occurred in the spring of 2020 and winter of 2021, coinciding with increasing numbers of COVID-19 cases and more stringent containment measures. While the frequency of price decreases remained below its pre-pandemic average from 2020 to 2022, the frequency of price increases exceeded its pre-pandemic average from early 2022 onward.

Looking at the same set of graphs for the size of price changes in Figure C.9, we notice a significant decline in the size of price changes for NEIG and services throughout the pandemic. The absolute size of price changes was smaller in almost every month than before the pandemic. When we distinguish between price increases and price decreases, we find that both price increases and price decreases were smaller on average compared to the two previous years.

Evaluating the frequency and size of price changes during the pandemic shows heterogeneous responses of Swiss price setters to the COVID-19 shock across sectors. This is in line with Henkel et al. (2023), who analyze national CPI microdata for Germany, Italy, Latvia and Slovakia, and show pronounced differences across sectors and countries in how price setting responded to the pandemic. By contrast, the response of Swiss firms to the surge in inflation in 2022 is much more uniform and harmonized, driven by a broad-based increase in the frequency of price increases across sectors.

The results in the top panels of Figure C.10 show that discount policies varied strongly across sectors already before the pandemic. Between January 2018 and December 2019, an average of 6.3 percent of all NEIG prices were temporarily discounted. By contrast, temporary sales played virtually no role in services (0.1 percent) and accounted for only a small share of food prices (1.3 percent). Following the outbreak of the pandemic, the frequency of temporary sales increased significantly for NEIG. It amounted to 14.7 percent on average in 2020, which is more than double the pre-pandemic level. In July 2020, more than 20 percent of all NEIG prices were sales prices. From 2021 onwards, the frequency of sales declined again, falling below its pre-pandemic average at 4.9 percent. Also, for services, we find that the frequency of sales increased by a factor of 3 to 0.3 percent

Figure C.8. Frequency of price changes, increases, and decreases across sectors during the pandemic



Notes: Frequency of price changes (in the top row), price increases (in the middle row), and price decreases (in the bottom row) across sectors during the pandemic from January 2020 to December 2022. The shaded areas show the mean of the respective measures from January 2018 to December 2019 and the dispersion measured as the standard deviation around the mean (resulting in two-standard-deviation bands). The sample includes temporary sales and product substitutions but excludes COVID price imputations. All moments are reported in percent per month.

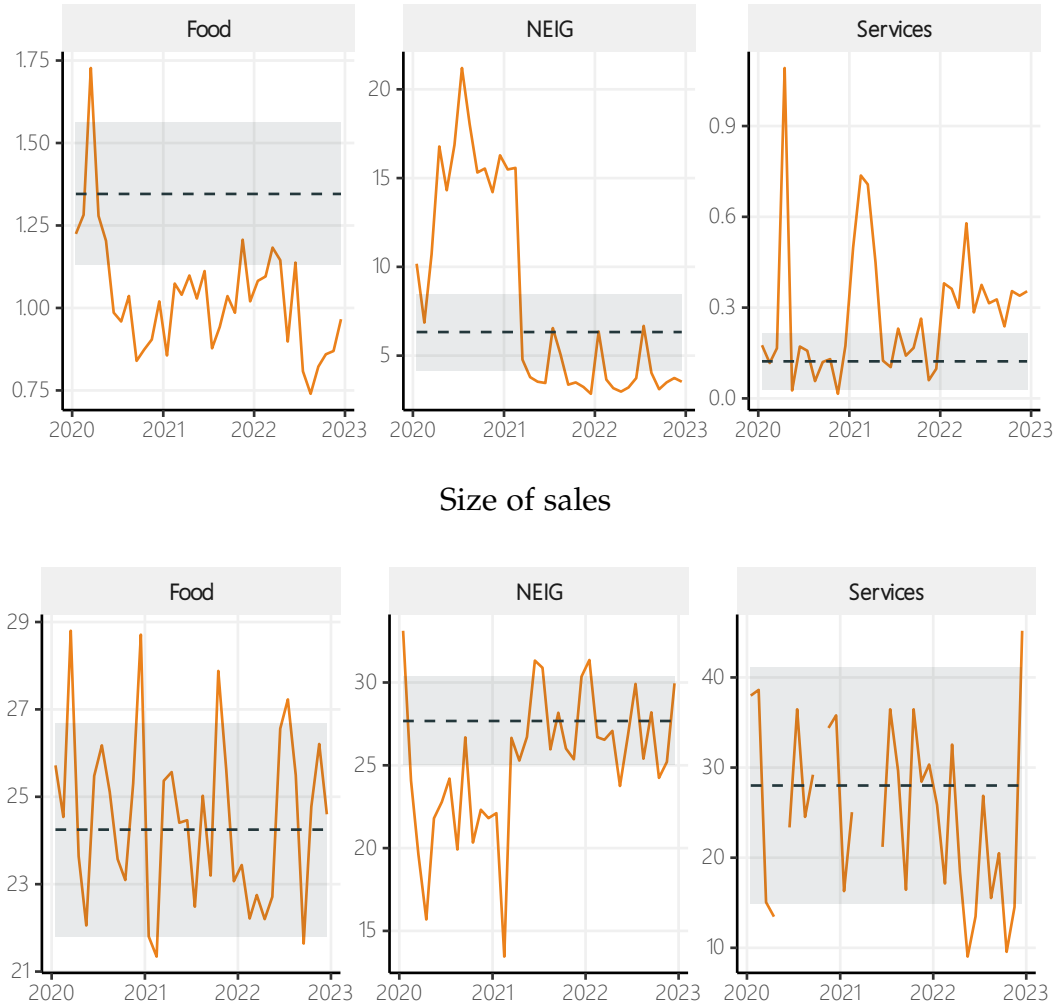
Figure C.9. Size of price changes, increases, and decreases across sectors during the pandemic

Notes: Absolute size of price changes (in the top row), price increases (in the middle row), and price decreases (in the bottom row) across sectors during the pandemic from January 2020 to December 2022. The shaded areas show the mean of the respective measures from January 2018 to December 2019 and the dispersion measured as the standard deviation around the mean (resulting in two-standard-deviation bands). The sample includes temporary sales and product substitutions but excludes COVID price imputations. All moments are reported in percent per month.

on average during the pandemic. By contrast, the frequency of sales decreased in the food sector, where demand increased with the pandemic. It dropped to 1.1 percent, on average, from January 2020 to December 2025, which corresponds to a decline of one-fifth compared to the pre-pandemic level. This decline is in line with findings of Henkel et al. (2023), who show that supermarket retailers in Germany and Italy responded to the positive demand shock following the outbreak of the pandemic by reducing the frequency of temporary sales.

The lower panels of Figure C.10 show the size of temporary price discounts across sectors. In 2020, discounts for NEIG were smaller than in the previous two years. From March 2020 to May 2021, the size of sales-related price changes was 22.9 percent on average and thus 6.0 percentage points smaller than in the two years prior to the pandemic. Retailers of NEIG appear to have cushioned the large losses of revenues during the lockdown with smaller but more frequent temporary sales. For food and services, we find no significant change in the size of temporary discounts. Taken together, the evidence on the frequency and size of temporary sales during the COVID-19 pandemic suggests that retailers adjust their use of temporary sales to macroeconomic shocks. In particular, the frequency of sales displayed a strongly countercyclical pattern in response to the pandemic. This finding contributes to the literature highlighting the responsiveness of temporary sales to aggregate shocks (e.g., Klenow and Willis, 2007; Kryvtsov and Vincent, 2021).

Figure C.10. Frequency and size of sales across sectors during the pandemic



Notes: The frequency of sales (in the top panels) and the (absolute) size of sales (in the bottom panels) across sectors during the pandemic from January 2020 to December 2022. The shaded areas show the mean of the respective measures from January 2018 to December 2019 and the dispersion measured as the standard deviation around the mean (resulting in two-standard deviation bands). The sample includes temporary sales and product substitutions but excludes COVID price imputations. All moments are reported in percent per month.

In Table C.2, we regress the price-setting moments on the subindices of the KOF Stringency Index to disentangle containment measures with stronger and weaker effects. Among the COVID-related restrictions with the strongest effects on the frequency of price adjustments are cancellations of public events, school closure and international travel controls. Weakest effect of restrictions on gatherings.

Table C.2. Effects of containment measures on the frequency of price changes

	Frequency of price changes							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
School	-2.069^{***}							
	(0.164)							
Workplace		-1.380^{***}						
		(0.155)						
Events			-2.287^{***}					
			(0.174)					
Gatherings				-0.697^{***}				
				(0.089)				
Transport					-1.490^{***}			
					(0.338)			
Stay-at-home						-1.668^{***}		
						(0.471)		
Domestic travel							-1.631^{***}	
							(0.464)	
Int. travel								-1.674^{***}
								(0.100)
Observations	6,983	6,983	6,983	6,983	6,983	6,983	6,983	6,983
R^2	0.011	0.005	0.010	0.005	0.003	0.002	0.002	0.022
Adjusted R^2	-0.025	-0.032	-0.026	-0.031	-0.033	-0.034	-0.034	-0.014

Notes: Panel regressions of the item-level frequency of price changes on individual subindices of the KOF Stringency Index, estimated separately for each containment measure. Each column uses a single containment subindex as the explanatory variable. All subindices are normalized to range from 0 to 100. The sample covers the pandemic period (February 2020–May 2021) and includes item fixed effects. Standard errors are reported in parentheses. Statistical significance: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table C.3 reports panel regression results for the frequency of price increases and decreases during the pandemic, relating item-level adjustment behavior to containment stringency, sectoral demand conditions, and their interaction.

Table C.3. Pandemic conditions and the frequency of price increases and decreases

	Frequency of price increases			Frequency of price decreases		
	(1)	(2)	(3)	(4)	(5)	(6)
Stringency index	−0.047***		0.005	−0.025***		0.018**
	(0.006)		(0.009)	(0.005)		(0.007)
Debit card spending		5.117***	8.588***		1.572***	5.944***
		(0.499)	(0.936)		(0.423)	(0.800)
Stringency × Debit card			−0.110***			−0.114***
			(0.018)			(0.015)
Observations	6,983	9,185	6,930	6,983	9,185	6,930
R^2	0.008	0.001	0.008	0.0002	0.00001	0.0001

Notes: Panel regressions of item-level price-setting moments on the KOF Stringency Index, sector-specific debit card spending (measured as deviations from January 2020), and their interaction. The interaction term captures how the effect of containment measures varies with sector-specific demand conditions. The dependent variable is the item-level frequency of price increases (columns 1–3) or decreases (columns 4–6). All specifications include item fixed effects. Standard errors are reported in parentheses. Statistical significance is indicated by * $p < 0.10$, ** $p < 0.05$, and *** $p < 0.01$.

Table C.4 presents corresponding panel regression estimates for the absolute size of price increases and decreases, distinguishing how pandemic conditions affect the intensive margin of price adjustment.

Table C.4. Pandemic conditions and the size of price increases and decreases

	Size of price increases			Size of price decreases		
	(1)	(2)	(3)	(4)	(5)	(6)
Stringency index	0.002		0.003	0.003		0.008**
	(0.002)		(0.004)	(0.003)		(0.004)
Debit card spending		−0.566***	−0.468		0.146	0.786**
		(0.206)	(0.378)		(0.214)	(0.391)
Stringency × Debit card			−0.007			−0.015*
			(0.007)			(0.008)
Observations	6,441	8,497	6,394	6,263	8,251	6,216
R^2	0.00002	0.001	0.001	0.0001	0.001	0.001

Notes: Panel regressions of item-level price-setting moments on the KOF Stringency Index, sector-specific debit card spending (measured as deviations from January 2020), and their interaction. The interaction term captures how the effect of containment measures varies with sector-specific demand conditions. The dependent variable is the item-level size of price increases (columns 1–3) or decreases (columns 4–6). All specifications include item fixed effects. Standard errors are reported in parentheses. Statistical significance is indicated by * $p < 0.10$, ** $p < 0.05$, and *** $p < 0.01$.

Table C.5 reports panel regression results for sales-related price-setting moments, examining how containment measures and sector-specific demand conditions shape the frequency and size of temporary price discounts.

Table C.5. Pandemic conditions and sales-related price-setting moments

	Frequency of sales price changes			Absolute size of sales price changes		
	(1)	(2)	(3)	(4)	(5)	(6)
Stringency index	0.046***		0.013***	−0.014**		−0.020**
	(0.003)		(0.004)	(0.006)		(0.008)
Debit card spending		−1.587***	−4.948***		0.590	−0.312
		(0.248)	(0.482)		(0.529)	(1.016)
Stringency × Debit card			0.092***			0.021
			(0.009)			(0.019)
Observations	6,983	9,185	6,930	4,200	5,593	4,186
R^2	0.005	0.009	0.009	0.002	0.0002	0.002

Notes: Panel regressions of item-level price-setting moments on the KOF Stringency Index, sector-specific debit card spending (measured as deviations from January 2020), and their interaction. The interaction term captures how the effect of containment measures varies with sector-specific demand conditions. The dependent variable is the item-level frequency (columns 1–3) or absolute size (columns 4–6) of sales price changes. All specifications include item fixed effects. Standard errors are reported in parentheses. Statistical significance is indicated by * $p < 0.10$, ** $p < 0.05$, and *** $p < 0.01$.

D. DATA ROBUSTNESS

This appendix presents robustness checks for the data treatment decisions described in Section 2.6, including results excluding items flagged as potentially mismeasured and sensitivity to the trimming of extreme price changes.

D.1 *Mismeasurement issues in CPI microdata*

As discussed in Section 2.6, we discard the following prices from our dataset to obtain our baseline sample: price imputations (as far as they can be identified), prices derived from auxiliary indices, and prices of administered or semi-administered prices. In addition, we exclude price changes greater than the 99th percentile of absolute log price changes and smaller than the 1st percentile for every variety.

Eichenbaum et al. (2014) raise various concerns with respect to mismeasurement in the context of CPI microdata. In what follows, we examine to what extent these concerns apply to our data. Eichenbaum et al. (2014) identify 27 problematic items in the US CPI. By problematic, they mean that spurious small price changes arise because of the method used to measure prices. Problematic prices are non-transactional prices that are computed as auxiliary indices or pertain to bundles of goods. We are able to match 20 of the 27 items with their counterparts in our Swiss dataset. Of these 20 problematic items, 11 are excluded by our sampling decisions summarized above. The 9 items that remain in the dataset are arguably all single-good transaction prices and are not computed as a unit value index. Nevertheless, we recalculate our results on the frequency and the size of price changes after excluding all items identified as problematic by Eichenbaum et al. (2014). The results are reported in Table D.1, Table D.2 and Table D.3. Comparing these results with Table 2 in the main text and Table B.1 in Online Appendix B.2 we find that the differences are small. None of our conclusions on price-setting behavior is affected.

Table D.1. Frequency of price adjustments, excluding items identified as problematic by Eichenbaum et al. (2014)

	Frequency of price adjustments			
	Changes f	Increases f^+	Decreases f^-	Share Increases
Mean	26.4	13.9	12.5	55.9
Median	16.3	6.7	5.6	
Std. dev.	28.7	20.0	19.3	

Notes: The sample ranges from January 2008 to December 2025 and includes price changes due to temporary sales and product substitutions but excludes all items identified as problematic by Eichenbaum et al. (2014). The frequencies of price "changes," "increases," and "decreases" refer to the weighted averages of the shares of price changes, increases, and decreases, respectively. The mean frequency of price changes is calculated by first computing the frequency of price changes for each variety and then taking a weighted mean across all varieties using CPI expenditure weights. Median statistics and statistics of standard deviations are calculated analogously. "Share of increases" refers to the share of price increases in all price changes. Values are reported in percent per month.

Table D.2. Size of price adjustments, excluding items identified as problematic by Eichenbaum et al. (2014)

	Size of price adjustments			
	Average Changes Δp	Absolute Changes $\lvert\Delta p\rvert$	Increases Δp^+	Decreases Δp^-
Mean	0.4	11.2	10.6	-11.6
Median	0.7	8.0	7.2	-8.3
Std. dev.	11.5	10.5	10.7	11.3

Notes: The sample ranges from January 2008 to December 2025 and includes price changes due to temporary sales and product substitutions but excludes all items identified as problematic by Eichenbaum et al. (2014). The sizes of "absolute" price changes, price "increases," and "decreases" refer to the weighted averages of the absolute size of price changes, size of price increases, and absolute size of price decreases, respectively. The mean size of average price changes is calculated by first computing the average size of price changes for each variety and then taking a weighted mean across all varieties using CPI expenditure weights. Median statistics and statistics of standard deviations are calculated analogously. Values are reported in percent per month.

Table D.3. Distribution of the size of price adjustments, excluding items identified as problematic by Eichenbaum et al. (2014)

	Size of price adjustments				
	Changes Δp	Abs. changes $\lvert\Delta p\rvert$	Increases Δp^+	Decreases Δp^-	Stand. changes z
Mean	0.1	8.1	8.1	-8.1	0.7
10th percentile	-11.6	0.6	0.5	-35.7	0.1
25th percentile	-3.0	1.3	2.0	-20.5	0.2
50th percentile	0.2	3.2	6.5	-8.0	0.6
75th percentile	3.4	8.5	17.1	-1.9	1.1
90th percentile	11.1	22.3	34.2	-0.4	1.6
Standard deviation	20.5	16.2	16.4	16.0	0.7
Skewness	0.2				0.0
Kurtosis	8.8				5.1

Notes: The sample ranges from January 2008 to December 2025 and includes price changes due to temporary sales and product substitutions but excludes all items identified as problematic by Eichenbaum et al. (2014). The sizes of average price "changes," "absolute" price changes, price "increases," "decreases," and "standardized" price changes refer to the weighted averages of the average size of price changes, absolute size of price changes, size of price increases, size of price decreases, and size of standardized price changes, respectively. The mean size of average price changes is calculated by first computing the average size of price changes for each variety and then taking a weighted mean across all varieties using CPI expenditure weights. Statistics of other moments are calculated analogously. Median statistics and statistics of standard deviations are calculated analogously. Values are reported in percent per month.

D.2 *Alternative trimming of the data*

The sampling decisions described in Section 2.6 restrict price changes in the data sample to price changes between the 1st percentile and the 99th percentile of the distribution of absolute log price changes. Table D.4 summarizes the statistics for the baseline (Case 0) and three alternative trimming thresholds. Statistics are given for the frequency and absolute size of price changes, the standard deviation, and the kurtosis. The kurtosis values reported in the table decrease when the lower threshold is more stringent.

Table D.4. Robustness of price-setting moments to outlier trimming

Case	Type of trimming	Obs.	f	$\lvert\Delta p\rvert$	sd($\lvert\Delta p\rvert$)	Kur(z)
0	$P1 < \lvert\Delta p\rvert < P99$	2243932	25.97	10.71	10.31	5.19
1	$0.5\% < \lvert\Delta p\rvert < P99$	2041726	24.35	11.71	10.42	4.66
2	$1\% < \lvert\Delta p\rvert < P99$	1880522	22.49	12.33	10.46	4.30
3	$P1 < \lvert\Delta p\rvert < 100\%$	2269355	26.73	10.81	10.08	5.17

Notes: Robustness of price-setting moments to outlier treatment. The sample ranges from January 2008 to December 2025 and includes price changes due to temporary sales and product substitutions. Case 0 corresponds to the trimming applied in the baseline sample in the main text. "Obs." denotes the number of price changes, f denotes the monthly frequency of price changes in percent, $|\Delta p|$ is the absolute size of price changes, sd($|\Delta p|$) is the standard deviation of the absolute size of price changes, and Kur(z) denotes the kurtosis of the standardized price changes. Moments are aggregated using CPI expenditure weights.

E. PRICE-SETTING BEAHVIOR AND INFLATION DYNAMICS

This appendix refers to Section 4 in the main body of the paper and presents additional analyses that are not featured in the main text.

E.1 *Decomposition of inflation into contributions from the frequency and size of price changes*

This appendix provides the formal counterfactual definitions underlying the results discussed in Section 4.1, together with the corresponding scatter plots.

Following Klenow and Kryvtsov (2008) or Wulfsberg (2016) we express the monthly item-level inflation rate as

$$\pi_{i,t} \approx \hat{\pi}_{i,t} = f_{i,t} \cdot \Delta p_{i,t}, \tag{18}$$

where $f_{i,t}$ is the frequency of price changes of expenditure item i in month t and $\Delta p_{i,t}$ is the mean of non-zero log price changes of that item, as defined formally in Online Appendix B.1. The variable $\hat{\pi}_t$ is an approximation and not an exact representation of the monthly CPI inflation rate π_t for two main reasons. First, our sample is restricted and does not include administered prices and prices based on unit value indices. Second, our weighting procedure relies solely on item weights from the basket of goods and services, without the additional stratification by regions and distribution channels applied in the calculation of the CPI (FSO, 2016).

Total frequency and size. Using the approximation in Equation (18), we construct two counterfactual estimates of CPI inflation to assess the contributions of the frequency and size of price changes to variations in inflation. The two estimates differ in that we allow either the frequency or the size of price changes to vary over time while holding the other constant at its item-specific mean. The frequency-related inflation rate, holding the size of price changes constant at Δp_i, is:

$$\hat{\pi}_{i,t}|_{\Delta p} = f_{i,t} \cdot \Delta p_i. \tag{19}$$

All variation in $\hat{\pi}_{i,t}|_{\Delta p}$ is due to variation in the frequencies of price changes. This case is consistent with predictions of a state-dependent model in which firms respond to shocks through the probability (but not the size) of price adjustments. Similarly, holding the frequency of price changes constant at f_i, the size-related inflation rate is:

$$\hat{\pi}_{i,t}|_{f} = f_i \cdot \Delta p_{i,t}. \tag{20}$$

All variation in $\hat{\pi}_{i,t}|_{f}$ is due to variation in the size of the price changes. This case is consistent with predictions of a pure Calvo (1983) model in which the probability of price changes is constant over time, and variation in inflation comes only from fluctuations in the size of price changes.

Increases and decreases separately. We can further investigate the contributions of the frequency and size of price changes to inflation variations by distinguishing between price increases and price decreases. In this case, the inflation rate can be written as

$$\hat{\pi}_{i,t} = f^{+}_{i,t} \cdot \Delta p^{+}_{i,t} + f^{-}_{i,t} \cdot \Delta p^{-}_{i,t}, \tag{21}$$

where $f^{+}_{i,t}$ and $f^{-}_{i,t}$ are the frequency of price increases and the frequency of price decreases and $\Delta p^{+}_{i,t}$ and $\Delta p^{-}_{i,t}$ are the average size of price increases and the average size of price decreases of item i in month t. We consider two counterfactual inflation rates based on Equation (21). The first, $\hat{\pi}_{i,t}|_{\Delta p^{+},\Delta p^{-}}$, is similar to the frequency-related inflation, but instead of holding the size of price changes constant, both the size of price increases and the size of price decreases are held constant over time:

$$\hat{\pi}_{i,t}|_{\Delta p^{+},\Delta p^{-}} = f^{+}_{i,t} \cdot \Delta p^{+}_{i} + f^{-}_{i,t} \cdot \Delta p^{-}_{i}. \tag{22}$$

The second counterfactual inflation rate, $\hat{\pi}_{i,t}|_{f^{+},f^{-}}$, assumes that the frequency of both price increases and decreases is constant over time:

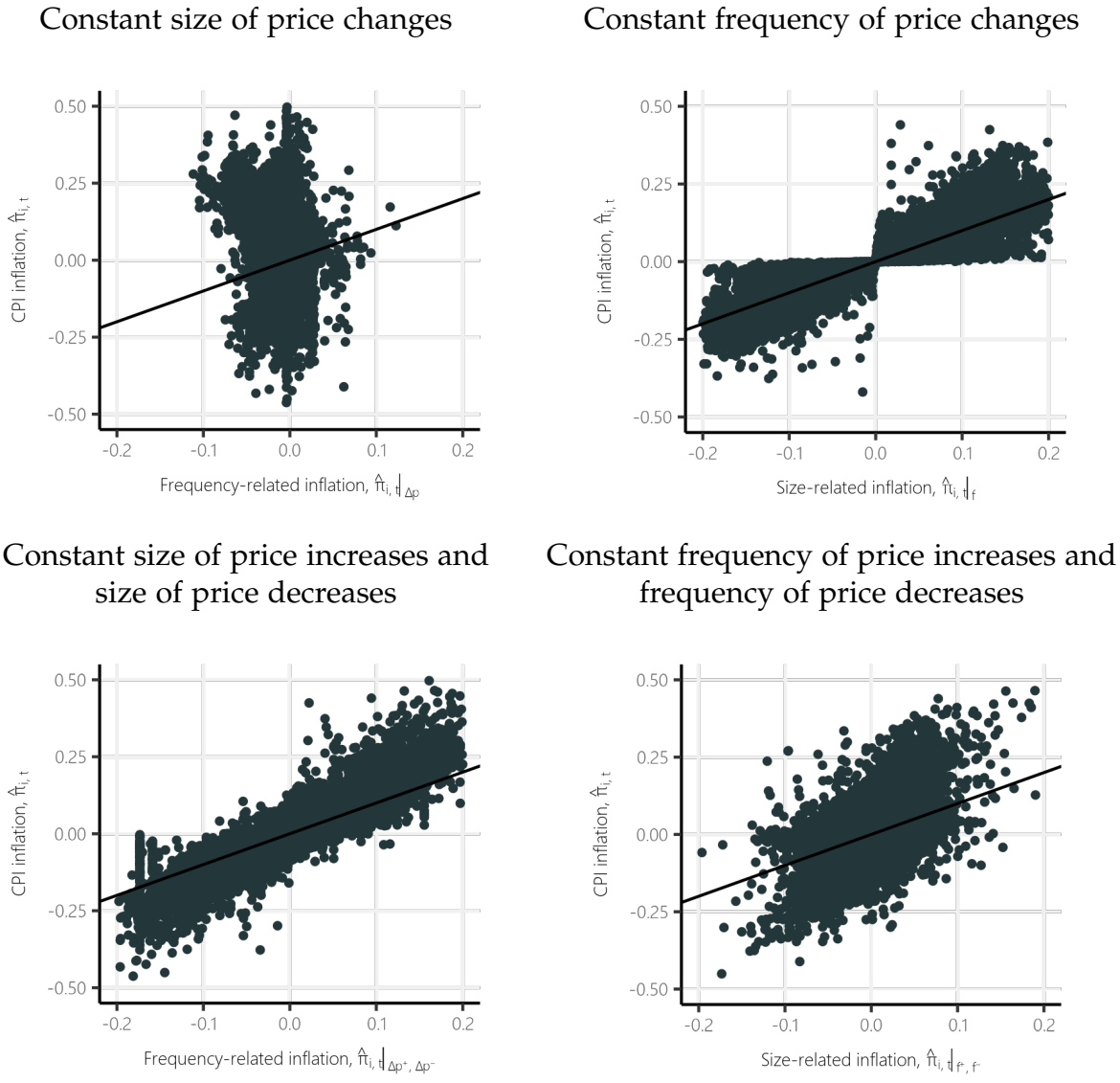
$$\hat{\pi}_{i,t}|_{f^{+},f^{-}} = f^{+}_{i} \cdot \Delta p^{+}_{i,t} + f^{-}_{i} \cdot \Delta p^{-}_{i,t}. \tag{23}$$

Thus, the variation in $\hat{\pi}_{i,t}|_{\Delta p^{+},\Delta p^{-}}$ is due to the variation in the frequencies of

price increases and price decreases, while the variation in $\hat{\pi}_{i,t}|_{f^+,f^-}$ is due to the variation in the size of price increases and price decreases.

Table 5 reports all four cross-correlations with inflation, and Figure E.1 provides scatter plots of each counterfactual against the actual inflation rate.

Figure E.1. Contributions of the frequency and size of price changes, increases, and decreases to inflation variations



Notes: Scatter plots between inflation, as in Equation (21), and counterfactual inflation rates, as in Equation (19), Equation (20), Equation (22), and Equation (23). The straight lines indicate the 45-degree line. The sample ranges from January 2008 to December 2025 and includes price changes due to temporary sales and product substitutions. A value of 0.1 corresponds to 10 percent.

E.2 *Data sources for shocks in local projections*

This section provides more information on the shocks used in the estimations of linear and nonlinear local projections.

Oil supply news shocks The oil supply news shocks are the shocks in futures prices around OPEC announcements extracted from the VAR from Känzig (2021). The shock series is regularly updated and currently spans from 1975:01 to 2025:06. The frequency of the series is monthly.

The IRFs are rescaled to produce an inflation reaction to a 10 percent increase in monthly Brent crude oil price changes.

Swiss franc safe haven shocks The Swiss franc safe haven shocks (Boneva, 2024) are approximated as the changes in a safe haven indicator (SHI) that is constructed as the first principal component from Friday-to-Friday changes in the Swiss franc and a set of financial market variables that typically rise or fall markedly during flight-to-safety episodes (Japanese yen, US dollar, VIX, gold price, 10-year US Treasury term premium, 10-year CH government bond term premium and the EA peripheral spread). The SHI is an unpublished weekly series that is regularly updated by SNB staff and spans from 2000:02 to 2026:03.

The IRFs are rescaled to produce an inflation reaction to a 10 percent depreciation of the Swiss franc against the euro. Hence, we reverse the Swiss franc safe haven shocks.

Supply chain shocks The supply chain shocks are structural shocks identified using disruptions to maritime trade at key shipping choke points, following a narrative and high-frequency identification strategy in Känzig and Raghavan (2026). The series is constructed from exogenous incidents at the Suez and Panama Canals, using surprise movements in shipping rates around these events as instruments in a VAR model to isolate supply chain shocks. The shock series is regularly updated and currently spans from 1971:01 to 2023:12. The frequency of the series is monthly.

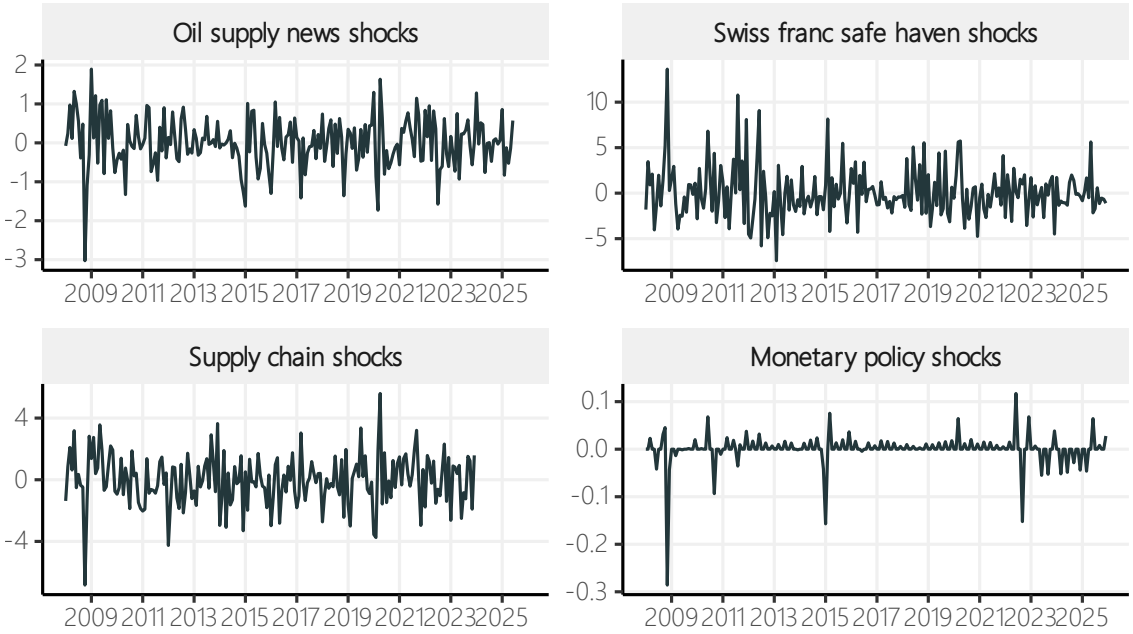
The IRFs are rescaled to produce an inflation reaction to a 10 percent increase in monthly changes in real shipping cost as measured by the Baltic Dry Index.

Monetary policy shocks The monetary policy shocks are provided by Nitschka and Oktay (2023), applying the identification approach of Bu et al. (2021) and Ciminelli et al. (2022) for Switzerland. The shock series spans from January 2000 to December 2025.

The IRFs are rescaled to produce an inflation reaction to a positive surprise in the 3-month EONIA swap rate of 25 basis points.

Figure E.2 shows the time series of the four aggregate shocks used in the linear and nonlinear local projections, plotted over the estimation sample from January 2008 to December 2025.

Figure E.2. Aggregate shocks used in local projections estimations



Notes: Time series of the four aggregate shocks used in the linear and nonlinear local projections, plotted over the estimation sample from January 2008 to December 2025. From top left to bottom right: oil supply news shocks (Känzig, 2021), Swiss franc safe haven shocks (Boneva, 2024) (sign-reversed so that positive values indicate depreciation), supply chain shocks (Känzig and Raghavan, 2026), and monetary policy shocks (Nitschka and Oktay, 2023).

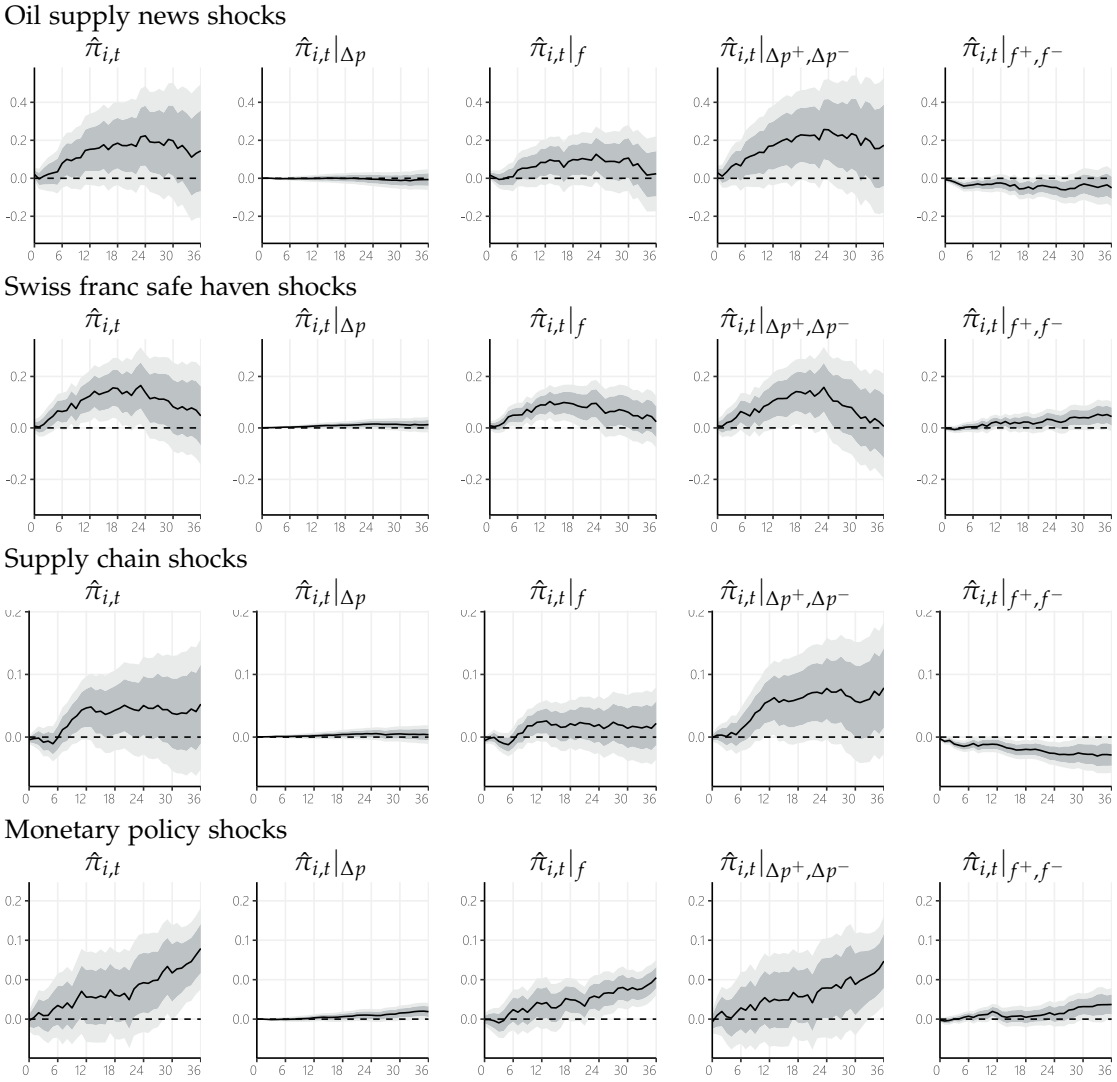
E.3 *Robustness to the inclusion of the pandemic period*

The results presented in the main body of the paper include exogenous dummy variables equal to one during the months with pandemic containment measures (i.e., during the period from February 2020 to May 2021) to mitigate the influence

of extreme outliers related to the COVID-19 pandemic. This section analyzes the robustness of these results to the inclusion of the pandemic period in the estimation.

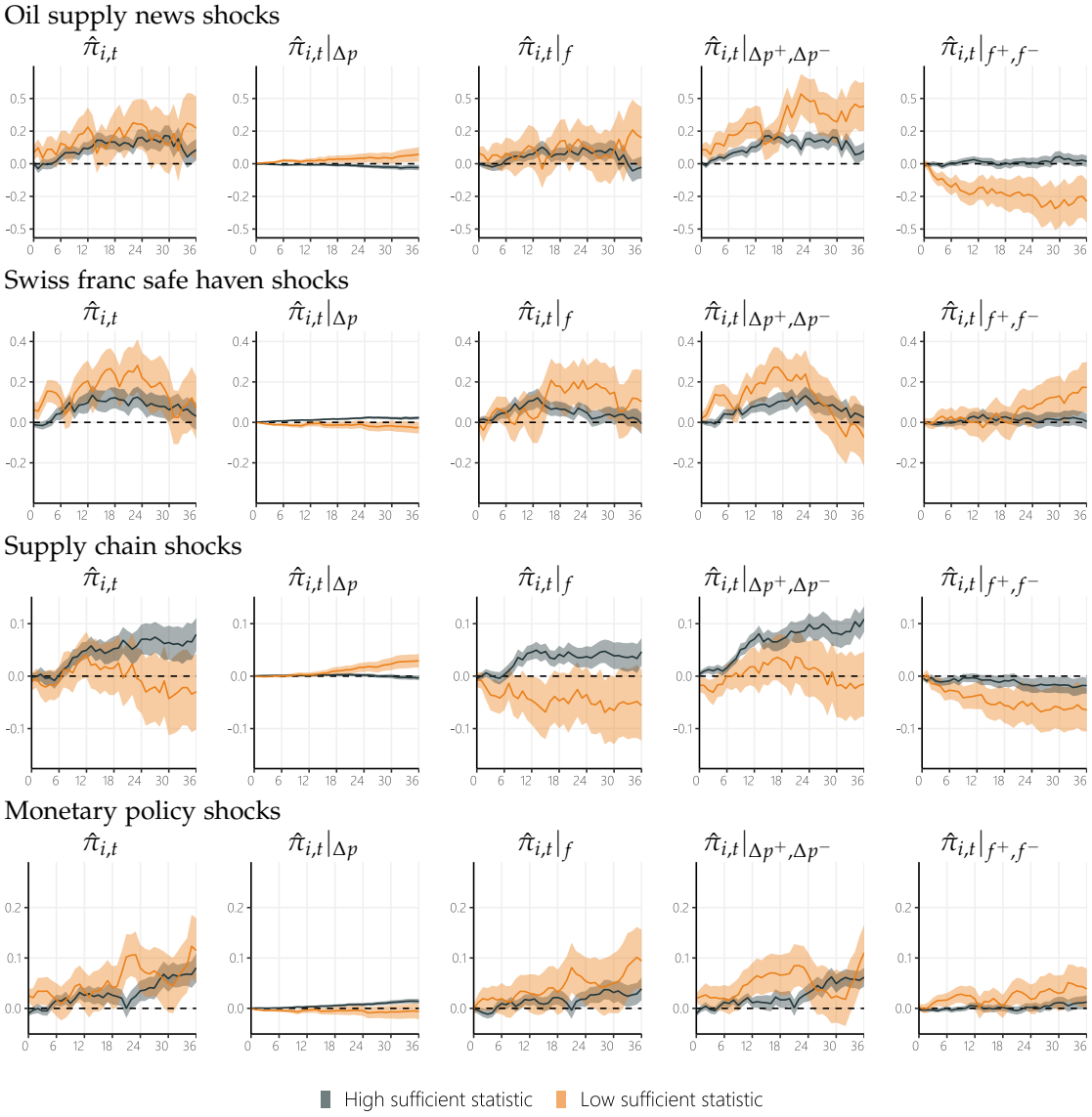
Figure E.3 shows the impulse response functions of recomposed and counterfactual inflation rates to aggregate shocks estimated using linear local projections, while Figure E.4 shows the corresponding IRFs estimated using nonlinear local projections. The resulting IRFs are qualitatively similar although more volatile when the pandemic is included.

Figure E.3. Conditional responses of recomposed and counterfactual inflation rates to aggregate shocks from linear local projections, excluding COVID dummies



Notes: Impulse response functions (solid lines) of recomposed and counterfactual inflation rates to aggregate shocks estimated using panel linear local projections and the sample of CPI microdata from January 2008 to December 2025 that includes price changes due to temporary sales and product substitutions. The models are specified in Equation (2), but estimated without pandemic dummy variables. The rows represent the IRFs to the different shocks: oil supply news, safe haven, supply chain, and monetary policy. The columns correspond to recomposed inflation ($\hat{\pi}_{i,t}$) and counterfactual inflation rates: assuming constant size and frequency of price changes ($\hat{\pi}_{i,t}|_{\Delta p}$ and $\hat{\pi}_{i,t}|_{f}$), and constant sizes and frequencies of price increases and decreases ($\hat{\pi}_{i,t}|_{\Delta p^+,\Delta p^-}$ and $\hat{\pi}_{i,t}|_{f^+,f^-}$). The dark- and light-gray areas are the 68 and 90 percent confidence bands, respectively.

Figure E.4. Conditional responses of recomposed and counterfactual inflation rates to aggregate shocks from nonlinear local projections, excluding COVID dummies

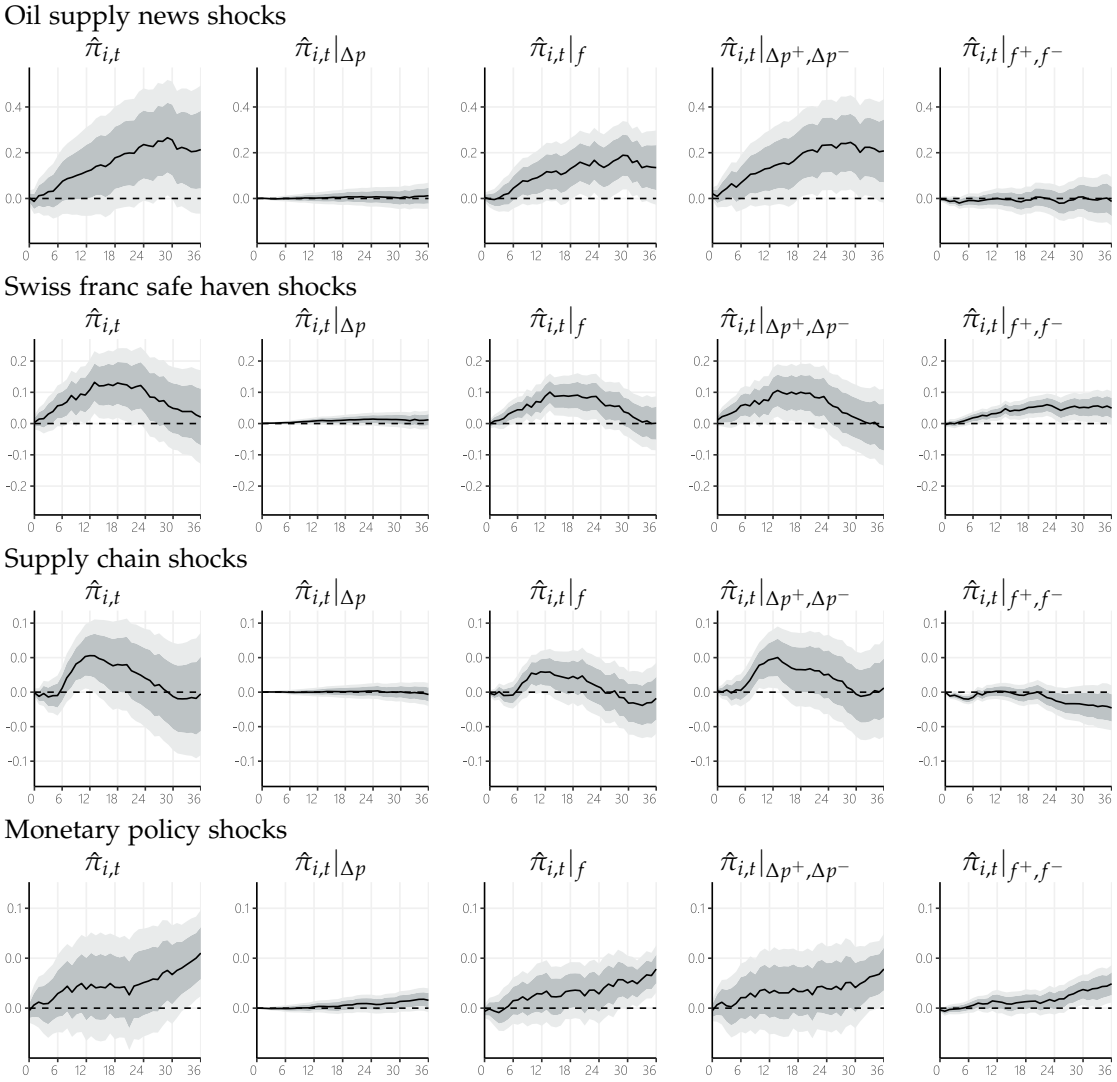


Notes: Impulse response functions (solid lines) of recomposed and counterfactual inflation rates to aggregate shocks estimated using panel nonlinear local projections and the sample of CPI microdata from January 2008 to December 2025 that includes price changes due to temporary sales and product substitutions. The models are specified in Equation (4), but estimated without pandemic dummy variables. The state variables are the item-level sufficient statistics calculated as in Equation (3). The rows represent the IRFs to the different shocks: oil supply news, safe haven, supply chain, and monetary policy. The columns correspond to recomposed inflation ($\hat{\pi}_{i,t}$) and counterfactual inflation rates: assuming constant size and frequency of price changes ($\hat{\pi}_{i,t}|_{\Delta p}$ and $\hat{\pi}_{i,t}|_{f}$), and constant sizes and frequencies of price increases and decreases ($\hat{\pi}_{i,t}|_{\Delta p^+,\Delta p^-}$ and $\hat{\pi}_{i,t}|_{f^+,f^-}$). The areas are the 68 percent confidence bands.

E.4 *Robustness to treatment of price changes due to temporary sales and product substitutions*

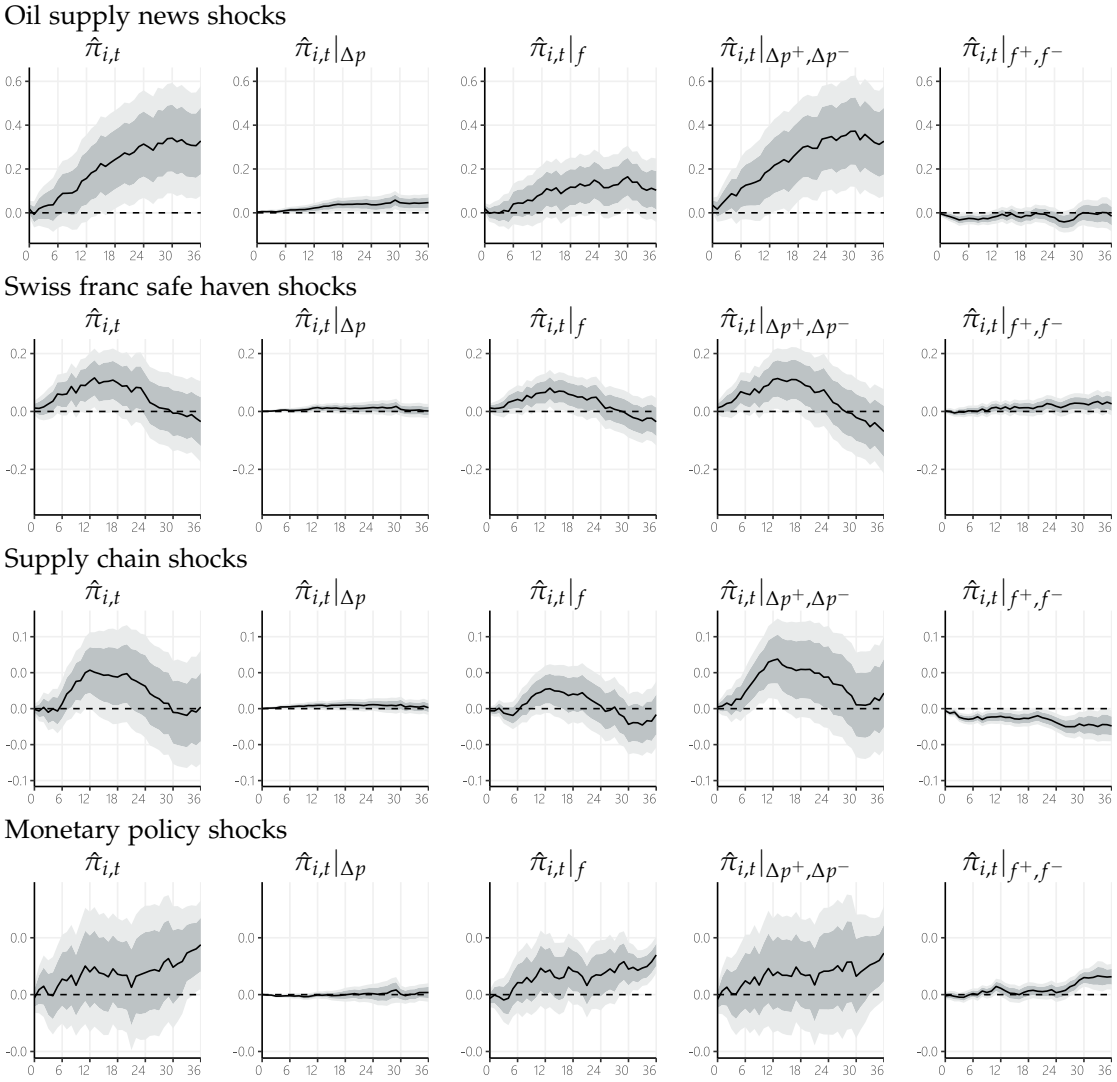
The results presented in the main body of the paper rely on the baseline sample that includes price changes due to temporary sales and product substitutions. This section analyzes the robustness of these results to the treatment of temporary sales and product substitutions. The IRFs are qualitatively similar when price changes due to temporary sales (Figure E.5), or product substitutions (Figure E.6), or both (Figure E.7) are excluded.

Figure E.5. Conditional responses of recomposed and counterfactual inflation rates to aggregate shocks from linear local projections, excluding price changes due to temporary sales



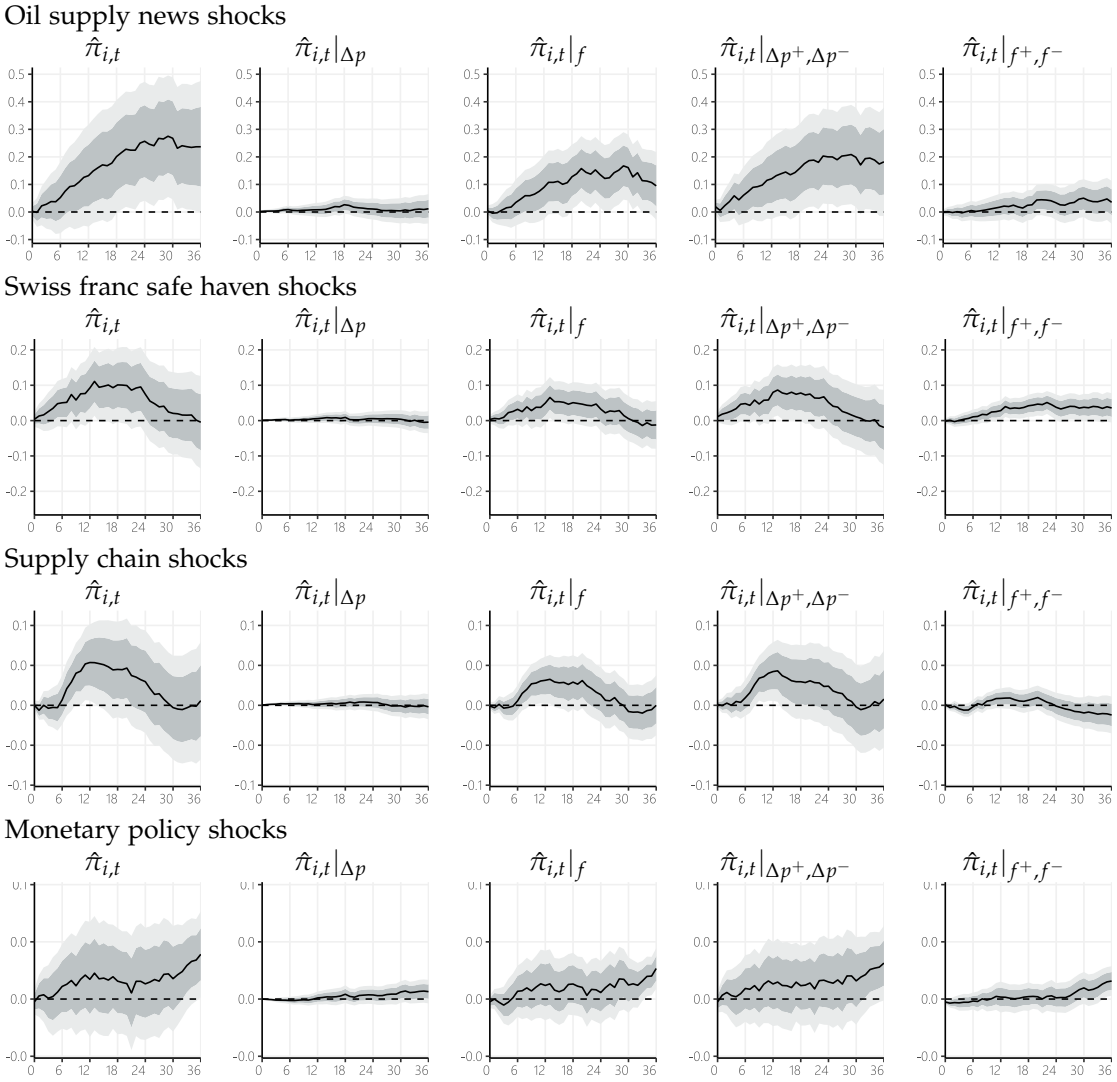
Notes: Impulse response functions (solid lines) of recomposed and counterfactual inflation rates to aggregate shocks estimated using panel linear local projections and the sample of CPI microdata from January 2008 to December 2025 that excludes price changes due to temporary sales and includes price changes due to product substitutions. The models are specified in Equation (2). The rows represent the IRFs to the different shocks: oil supply news, safe haven, supply chain, and monetary policy. The columns correspond to recomposed inflation ($\hat{\pi}_{i,t}$) and counterfactual inflation rates: assuming constant size and frequency of price changes ($\hat{\pi}_{i,t}|_{\Delta p}$ and $\hat{\pi}_{i,t}|_{f}$), and constant sizes and frequencies of price increases and decreases ($\hat{\pi}_{i,t}|_{\Delta p^+,\Delta p^-}$ and $\hat{\pi}_{i,t}|_{f^+,f^-}$). The dark- and light-gray areas are the 68 and 90 percent confidence bands, respectively.

Figure E.6. Conditional responses of recomposed and counterfactual inflation rates to aggregate shocks from linear local projections, excluding price changes due to product substitutions



Notes: Impulse response functions (solid lines) of recomposed and counterfactual inflation rates to aggregate shocks estimated using panel linear local projections and the sample of CPI microdata from January 2008 to December 2025 that includes price changes due to temporary sales and excludes price changes due to product substitutions. The models are specified in Equation (2). The rows represent the IRFs to the different shocks: oil supply news, safe haven, supply chain, and monetary policy. The columns correspond to recomposed inflation ($\hat{\pi}_{i,t}$) and counterfactual inflation rates: assuming constant size and frequency of price changes ($\hat{\pi}_{i,t}|_{\Delta p}$ and $\hat{\pi}_{i,t}|_{f}$), and constant sizes and frequencies of price increases and decreases ($\hat{\pi}_{i,t}|_{\Delta p^+,\Delta p^-}$ and $\hat{\pi}_{i,t}|_{f^+,f^-}$). The dark- and light-gray areas are the 68 and 90 percent confidence bands, respectively.

Figure E.7. Conditional responses of recomposed and counterfactual inflation rates to aggregate shocks from linear local projections, excluding price changes due to temporary sales and product substitutions



Notes: Impulse response functions (solid lines) of recomposed and counterfactual inflation rates to aggregate shocks estimated using panel linear local projections and the sample of CPI microdata from January 2008 to December 2025 that excludes price changes due to temporary sales and product substitutions. The models are specified in Equation (2). The rows represent the IRFs to the different shocks: oil supply news, safe haven, supply chain, and monetary policy. The columns correspond to recomposed inflation ($\hat{\pi}_{i,t}$) and counterfactual inflation rates: assuming constant size and frequency of price changes ($\hat{\pi}_{i,t}|_{\Delta p}$ and $\hat{\pi}_{i,t}|_{f}$), and constant sizes and frequencies of price increases and decreases ($\hat{\pi}_{i,t}|_{\Delta p^+,\Delta p^-}$ and $\hat{\pi}_{i,t}|_{f^+,f^-}$). The dark- and light-gray areas are the 68 and 90 percent confidence bands, respectively.

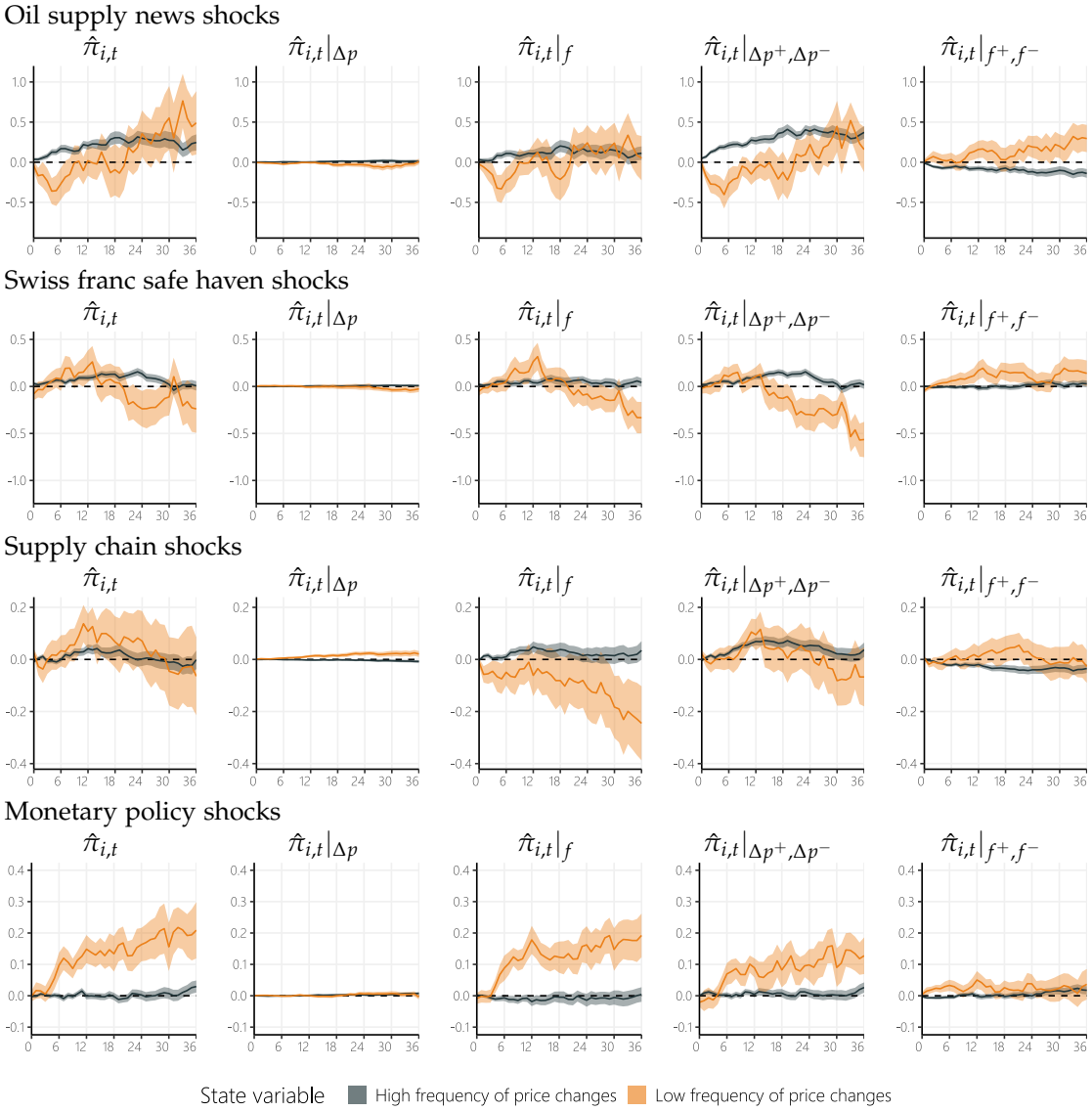
E.5 *Robustness to alternative state variables*

This section examines the robustness of the nonlinear local-projection results to alternative state variables. Figure E.8 reports impulse response functions when regimes are defined using the frequency of price changes alone, while Figure E.9 reports corresponding results using the kurtosis of standardized price changes as the state variable.

The qualitative finding from the baseline—that inflation responses are stronger and faster in the low-sufficient-statistic regime—is broadly replicated when the frequency alone is used as the state variable. For the oil supply news shock, the safe haven shock, and the monetary policy shock, the high-frequency regime produces more precisely estimated and larger responses than the low-frequency regime, consistent with the baseline result. The supply chain shock is an exception: when regimes are defined by frequency alone, both regimes show positive responses, with the high-frequency regime exhibiting a somewhat larger cumulated effect, qualitatively in line with the baseline.

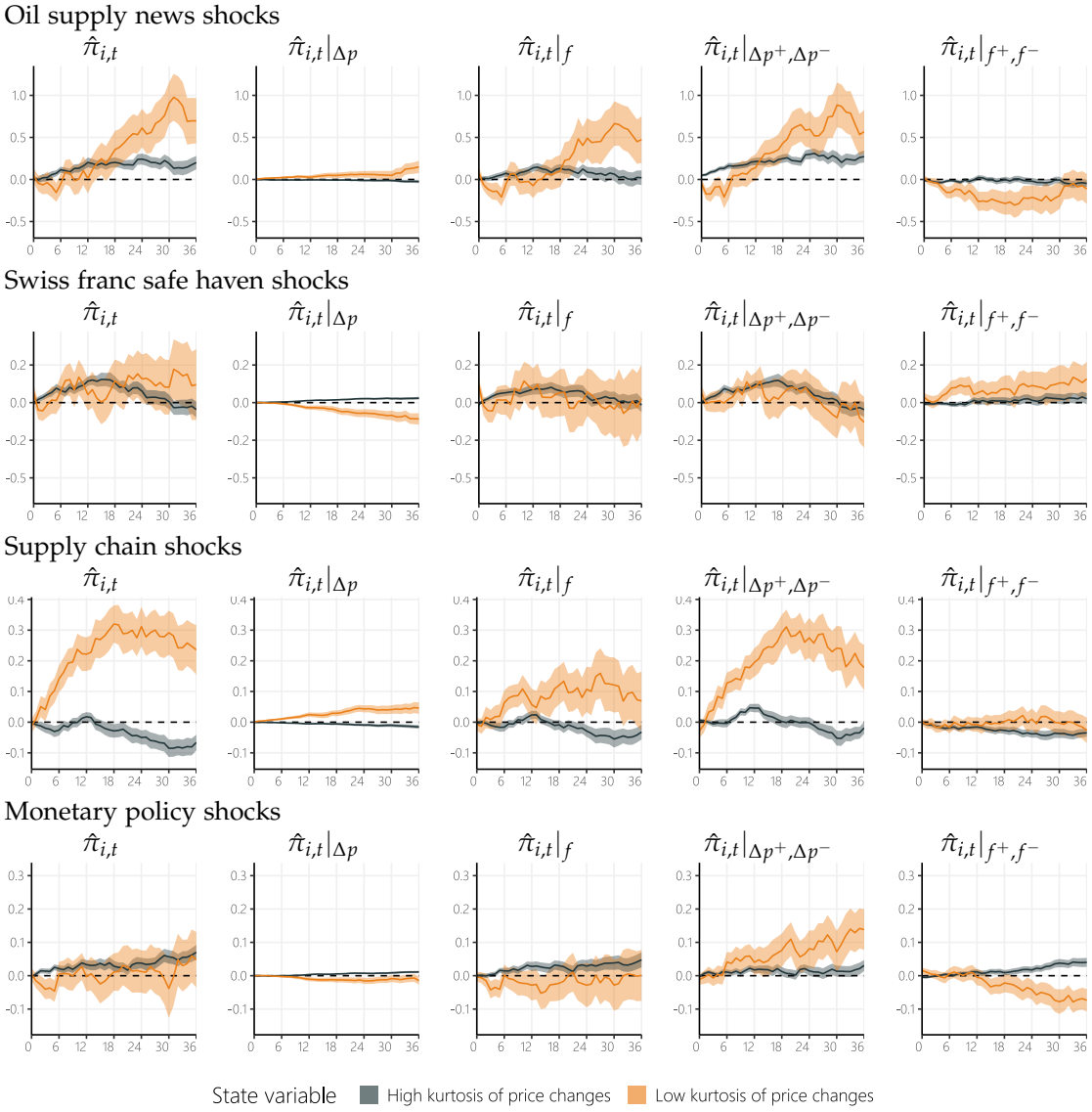
Results based on kurtosis alone are less uniform across shocks. For the monetary policy shock, a high-kurtosis state—associated with strong price selection—produces substantially larger responses than a low-kurtosis state, consistent with the baseline. For the oil supply news shock, the kurtosis-based results are also broadly aligned with the baseline. However, for the supply chain and safe haven shocks, the kurtosis-based results differ more markedly from the baseline: in these cases, the high-kurtosis regime produces responses of the opposite sign relative to the frequency-based and baseline results, suggesting that kurtosis alone provides a noisier regime indicator for these shock types. This is consistent with the theoretical motivation for the sufficient statistic as a ratio: kurtosis and frequency carry complementary information, and neither alone spans the full variation in price-setting regimes that their ratio captures.

Figure E.8. Conditional responses of recomposed and counterfactual inflation rates to aggregate shocks from nonlinear local projections, using the frequency of price changes as state variable



Notes: Impulse response functions (solid lines) of recomposed and counterfactual inflation rates to aggregate shocks estimated using panel nonlinear local projections and the sample of CPI microdata from January 2008 to December 2025 that includes price changes due to temporary sales and product substitutions. The models are specified in Equation (4). The state variables are the item-level frequencies of price changes. The rows represent the IRFs to the different shocks: oil supply news, safe haven, supply chain, and monetary policy. The columns correspond to recomposed inflation ($\hat{\pi}_{i,t}$) and counterfactual inflation rates: assuming constant size and frequency of price changes ($\hat{\pi}_{i,t}|_{\Delta p}$ and $\hat{\pi}_{i,t}|_{f}$), and constant sizes and frequencies of price increases and decreases ($\hat{\pi}_{i,t}|_{\Delta p^+,\Delta p^-}$ and $\hat{\pi}_{i,t}|_{f^+,f^-}$). The areas are the 68 percent confidence bands.

Figure E.9. Conditional responses of recomposed and counterfactual inflation rates to aggregate shocks from nonlinear local projections, using the kurtosis of standardized price changes as state variable

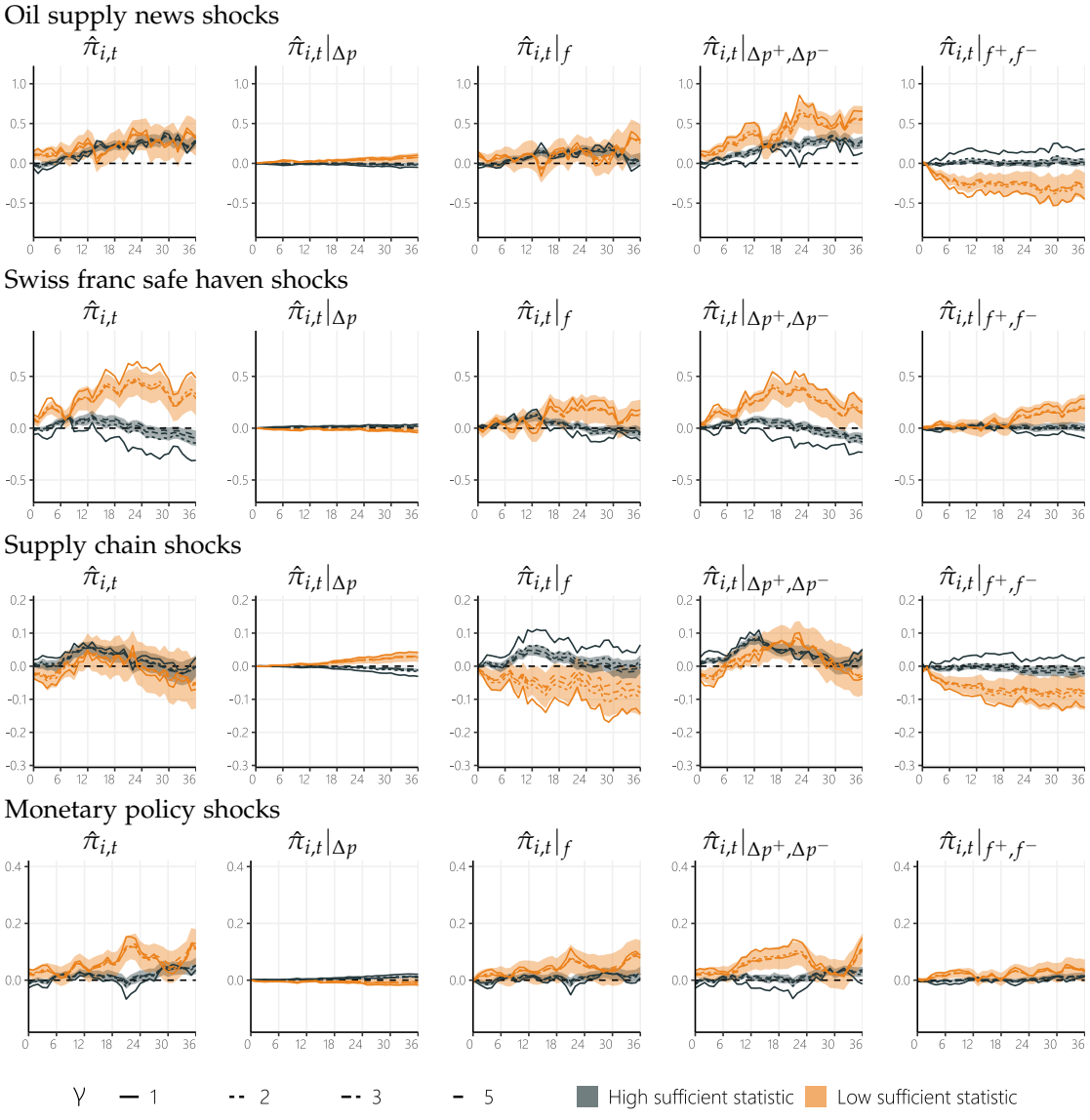


Notes: Impulse response functions (solid lines) of recomposed and counterfactual inflation rates to aggregate shocks estimated using panel nonlinear local projections and the sample of CPI microdata from January 2008 to December 2025 that includes price changes due to temporary sales and product substitutions. The models are specified in Equation (4). The state variables are the item-level kurtosis of standardized price changes. The rows represent the IRFs to the different shocks: oil supply news, safe haven, supply chain, and monetary policy. The columns correspond to recomposed inflation ($\hat{\pi}_{i,t}$) and counterfactual inflation rates: assuming constant size and frequency of price changes ($\hat{\pi}_{i,t}|_{\Delta p}$ and $\hat{\pi}_{i,t}|_{f}$), and constant sizes and frequencies of price increases and decreases ($\hat{\pi}_{i,t}|_{\Delta p^+,\Delta p^-}$ and $\hat{\pi}_{i,t}|_{f^+,f^-}$). The areas are the 68 percent confidence bands.

E.6 *Robustness to alternative values of the transition-function intensity parameter*

This section assesses the sensitivity of the nonlinear local-projection estimates to alternative values of the transition-function intensity parameter γ. Figure E.10 shows impulse response functions estimated under looser and sharper regime switching than in the baseline specification. The IRFs are qualitatively similar regardless of the intensity of regime switching.

Figure E.10. Conditional responses of recomposed and counterfactual inflation rates to aggregate shocks from nonlinear local projections, with alternative values of the transition-function intensity parameter γ

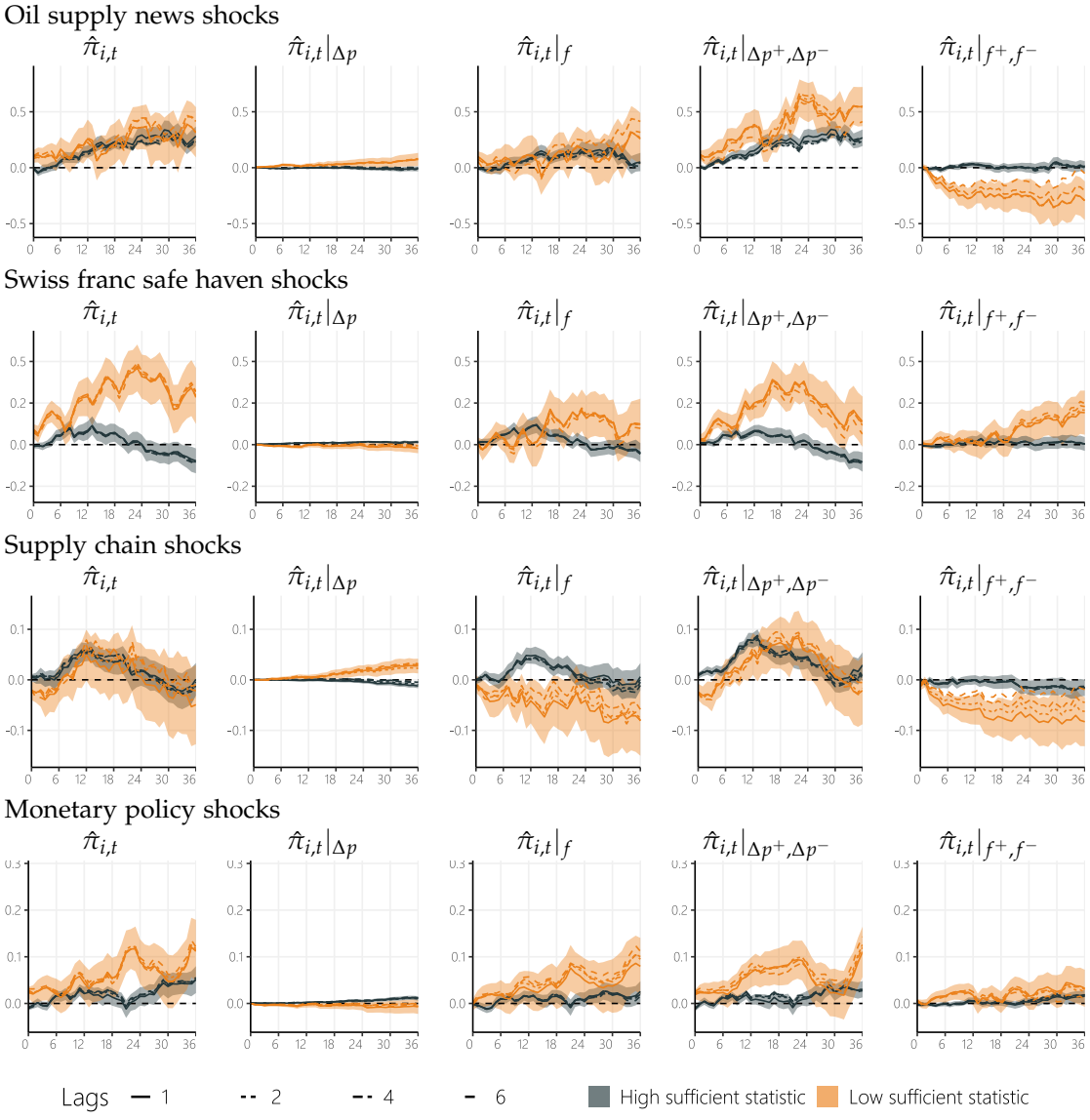


Notes: Impulse response functions (solid lines) of recomposed and counterfactual inflation rates to aggregate shocks estimated using panel nonlinear local projections and the sample of CPI microdata from January 2008 to December 2025 that includes price changes due to temporary sales and product substitutions. The models are specified in Equation (4) and estimated with varying transition-function intensity parameters. The state variables are the item-level sufficient statistics calculated as in Equation (3). The rows represent the IRFs to the different shocks: oil supply news, safe haven, supply chain, and monetary policy. The columns correspond to recomposed inflation ($\hat{\pi}_{i,t}$) and counterfactual inflation rates: assuming constant size and frequency of price changes ($\hat{\pi}_{i,t}|_{\Delta p}$ and $\hat{\pi}_{i,t}|_{f}$), and constant sizes and frequencies of price increases and decreases ($\hat{\pi}_{i,t}|_{\Delta p^+,\Delta p^-}$ and $\hat{\pi}_{i,t}|_{f^+,f^-}$). The areas are the 68 percent confidence bands.

E.7 *Robustness to alternative lag structures*

This section evaluates the robustness of the nonlinear local-projection results to alternative lag structures. Figure E.11 reports impulse response functions obtained when including additional lags of the exogenous variables relative to the baseline specification. The IRFs are qualitatively similar regardless of the lag structure.

Figure E.11. Conditional responses of recomposed and counterfactual inflation rates to aggregate shocks from nonlinear local projections, with alternative lag structures

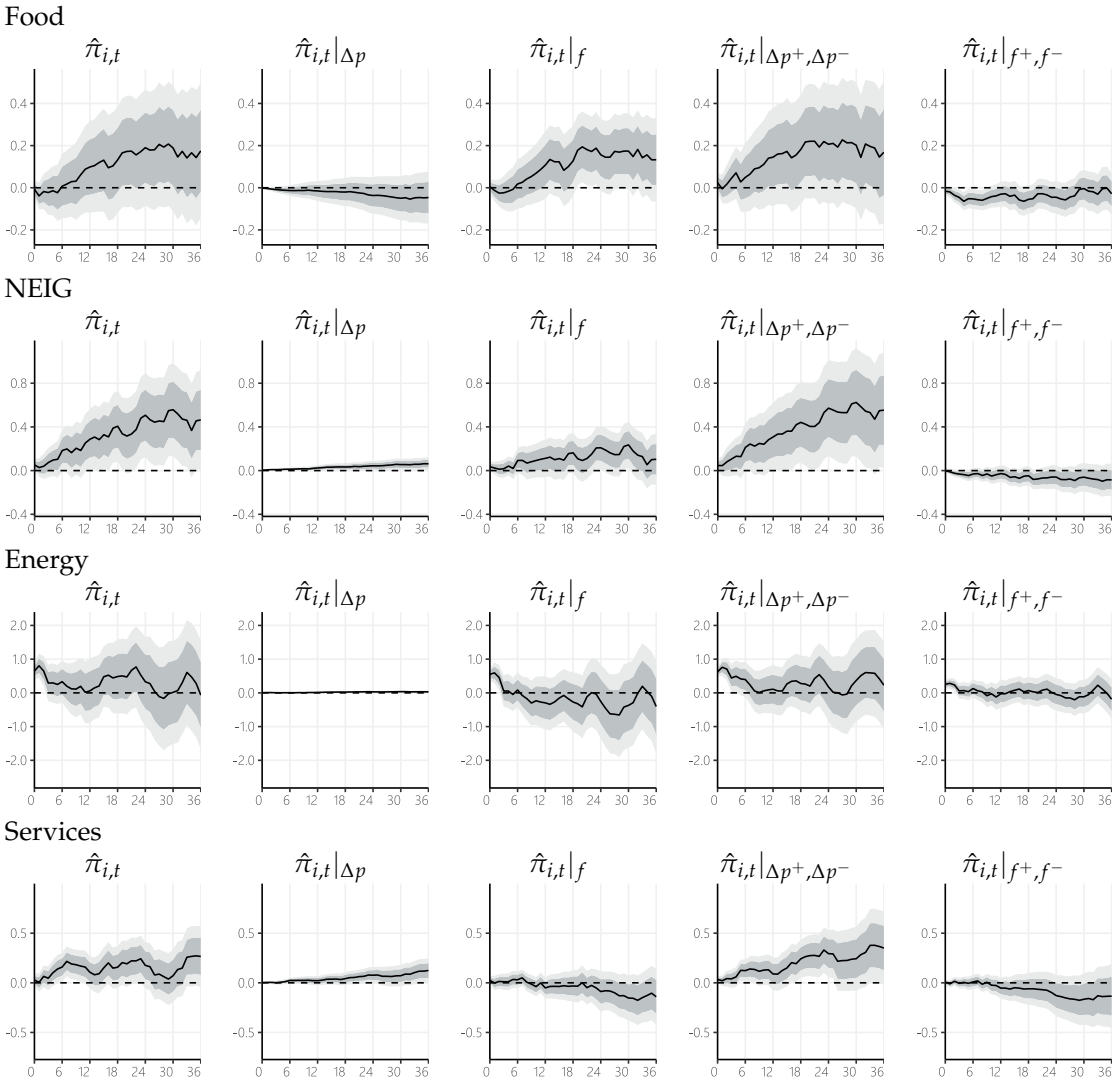


Notes: Impulse response functions (solid lines) of recomposed and counterfactual inflation rates to aggregate shocks estimated using panel nonlinear local projections and the sample of CPI microdata from January 2008 to December 2025 that includes price changes due to temporary sales and product substitutions. The models are specified in Equation (4) and estimated with varying lag structures. The state variables are the item-level sufficient statistics calculated as in Equation (3). The rows represent the IRFs to the different shocks: oil supply news, safe haven, supply chain, and monetary policy. The columns correspond to recomposed inflation ($\hat{\pi}_{i,t}$) and counterfactual inflation rates: assuming constant size and frequency of price changes ($\hat{\pi}_{i,t}|_{\Delta p}$ and $\hat{\pi}_{i,t}|_{f}$), and constant sizes and frequencies of price increases and decreases ($\hat{\pi}_{i,t}|_{\Delta p^+,\Delta p^-}$ and $\hat{\pi}_{i,t}|_{f^+,f^-}$). The areas are the 68 percent confidence bands.

E.8 *Cross-sectional heterogeneity*

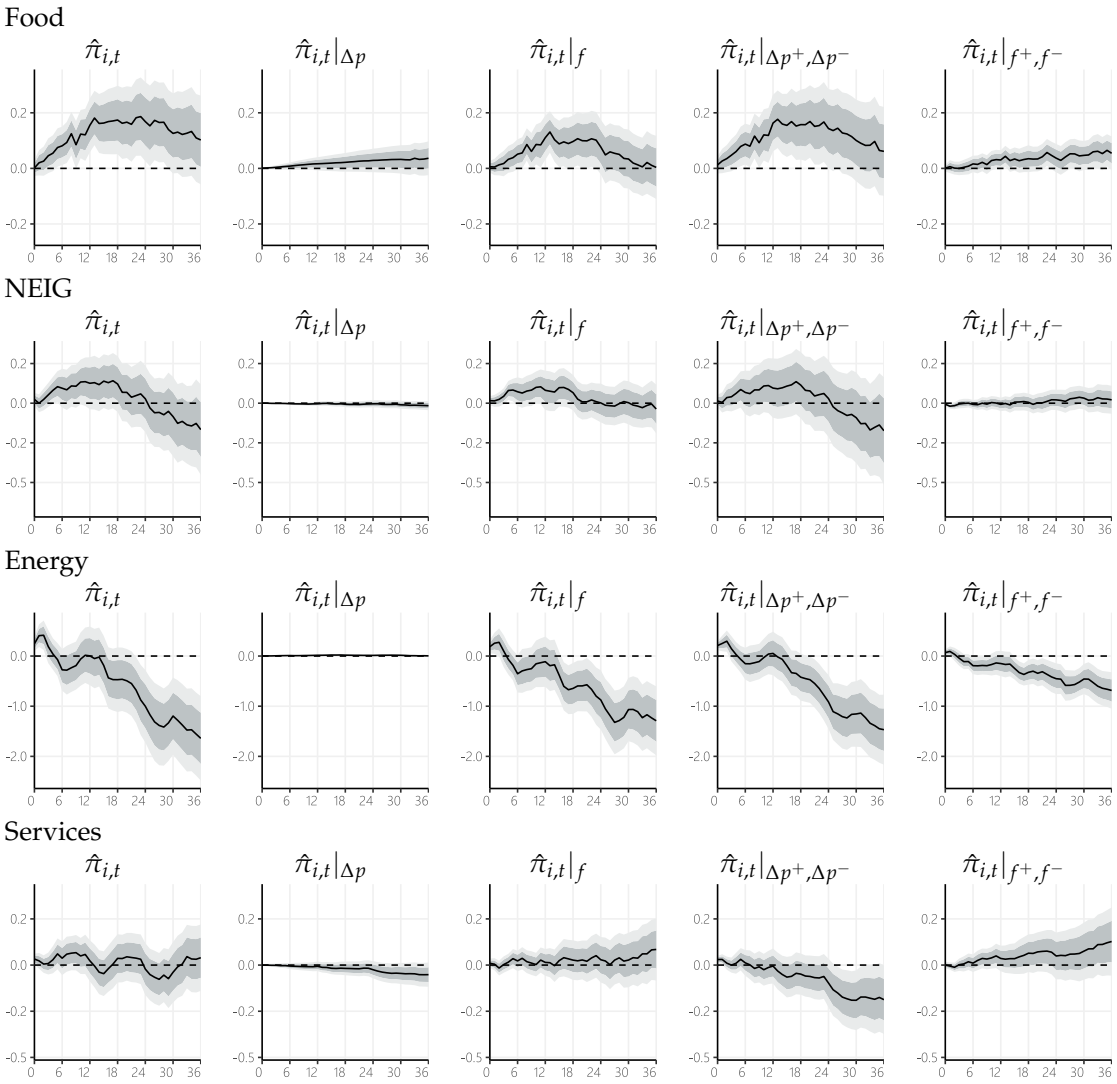
This section examines sectoral differences in the inflation responses to aggregate shocks. We consider four sectors: food, NEIG, energy, and services. Figure E.12 shows the conditional responses of recomposed and counterfactual inflation rates to oil supply news shocks across sectors. Figure E.13 presents the corresponding responses to Swiss franc safe-haven shocks, while Figure E.14 and Figure E.15 show the responses to supply chain and monetary policy shocks, respectively.

Figure E.12. Conditional responses of recomposed and counterfactual inflation rates to oil supply news shocks across sectors from linear local projections



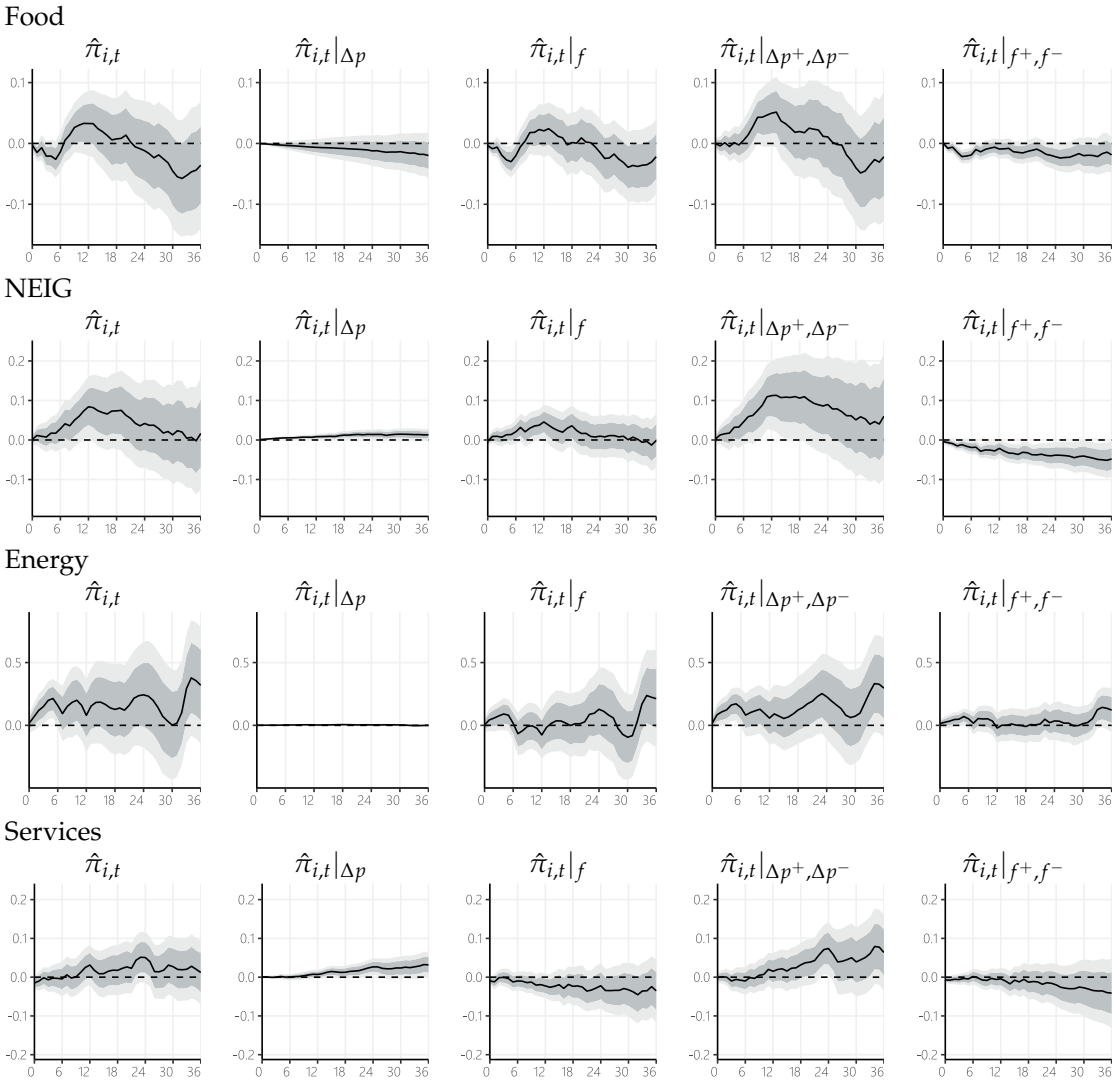
Notes: Impulse response functions (solid lines) of recomposed and counterfactual inflation rates to oil supply news shocks across sectors estimated using panel linear local projections and the sample of CPI microdata from January 2008 to December 2025 that includes price changes due to temporary sales and product substitutions. The models are specified in Equation (2). The rows represent the IRFs across sectors: food, NEIG, energy, and services. The columns correspond to recomposed inflation ($\hat{\pi}_{i,t}$) and counterfactual inflation rates: assuming constant size and frequency of price changes ($\hat{\pi}_{i,t}|_{\Delta p}$ and $\hat{\pi}_{i,t}|_{f}$), and constant sizes and frequencies of price increases and decreases ($\hat{\pi}_{i,t}|_{\Delta p^+,\Delta p^-}$ and $\hat{\pi}_{i,t}|_{f^+,f^-}$). The dark- and light-gray areas are the 68 and 90 percent confidence bands, respectively.

Figure E.13. Conditional responses of recomposed and counterfactual inflation rates to reversed Swiss franc safe haven shocks across sectors from linear local projections



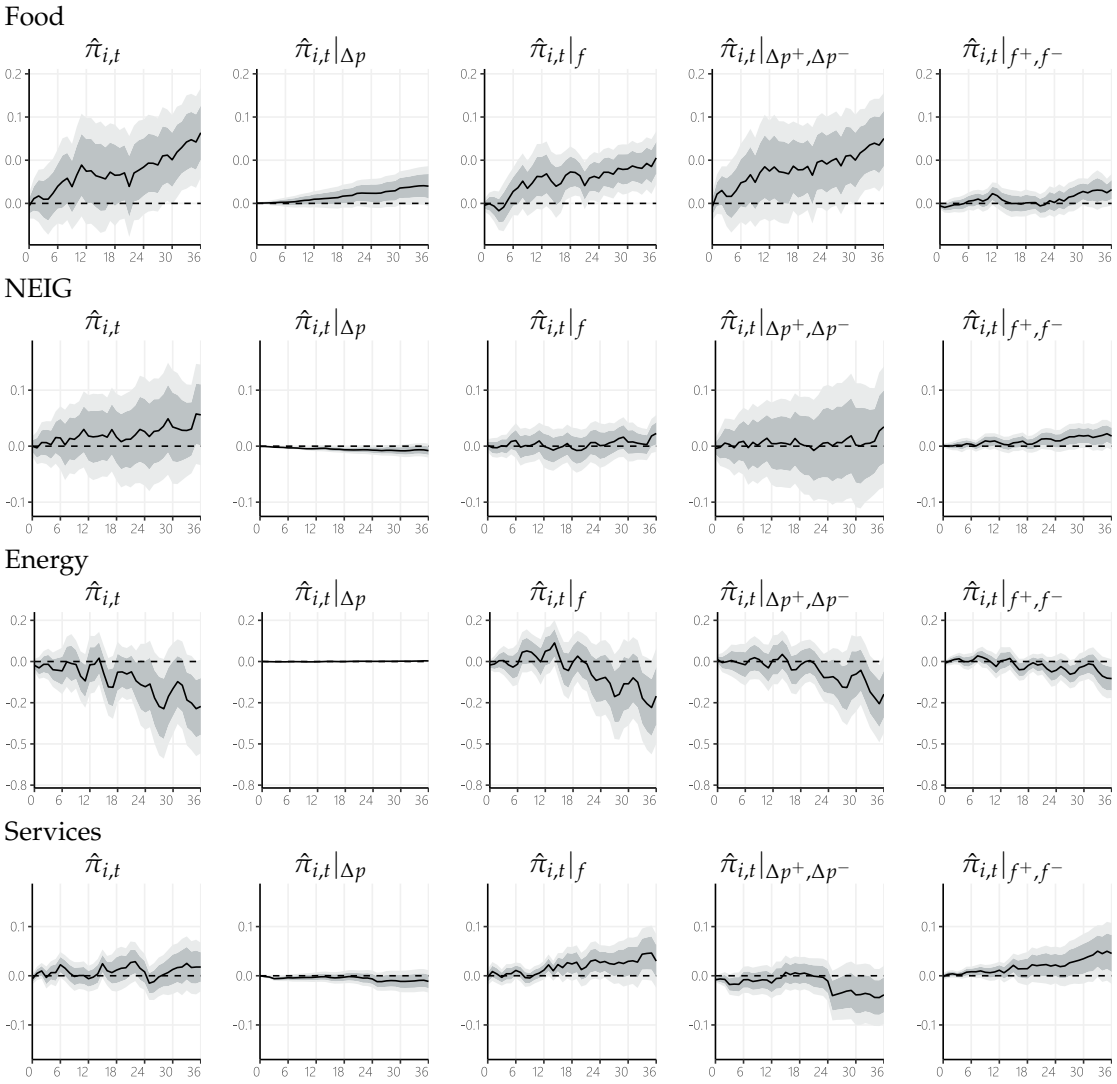
Notes: Impulse response functions (solid lines) of recomposed and counterfactual inflation rates to reversed Swiss franc safe haven shocks across sectors estimated using panel linear local projections and the sample of CPI microdata from January 2008 to December 2025 that includes price changes due to temporary sales and product substitutions. The models are specified in Equation (2). The rows represent the IRFs across sectors: food, NEIG, energy, and services. The columns correspond to recomposed inflation ($\hat{\pi}_{i,t}$) and counterfactual inflation rates: assuming constant size and frequency of price changes ($\hat{\pi}_{i,t}|_{\Delta p}$ and $\hat{\pi}_{i,t}|_{f}$), and constant sizes and frequencies of price increases and decreases ($\hat{\pi}_{i,t}|_{\Delta p^+,\Delta p^-}$ and $\hat{\pi}_{i,t}|_{f^+,f^-}$). The dark- and light-gray areas are the 68 and 90 percent confidence bands, respectively.

Figure E.14. Conditional responses of recomposed and counterfactual inflation rates to supply chain shocks across sectors from linear local projections



Notes: Impulse response functions (solid lines) of recomposed and counterfactual inflation rates to supply chain shocks across sectors estimated using panel linear local projections and the sample of CPI microdata from January 2008 to December 2025 that includes price changes due to temporary sales and product substitutions. The models are specified in Equation (2). The rows represent the IRFs across sectors: food, NEIG, energy, and services. The columns correspond to recomposed inflation ($\hat{\pi}_{i,t}$) and counterfactual inflation rates: assuming constant size and frequency of price changes ($\hat{\pi}_{i,t}|_{\Delta p}$ and $\hat{\pi}_{i,t}|_{f}$), and constant sizes and frequencies of price increases and decreases ($\hat{\pi}_{i,t}|_{\Delta p^+,\Delta p^-}$ and $\hat{\pi}_{i,t}|_{f^+,f^-}$). The dark- and light-gray areas are the 68 and 90 percent confidence bands, respectively.

Figure E.15. Conditional responses of recomposed and counterfactual inflation rates to monetary policy shocks across sectors from linear local projections

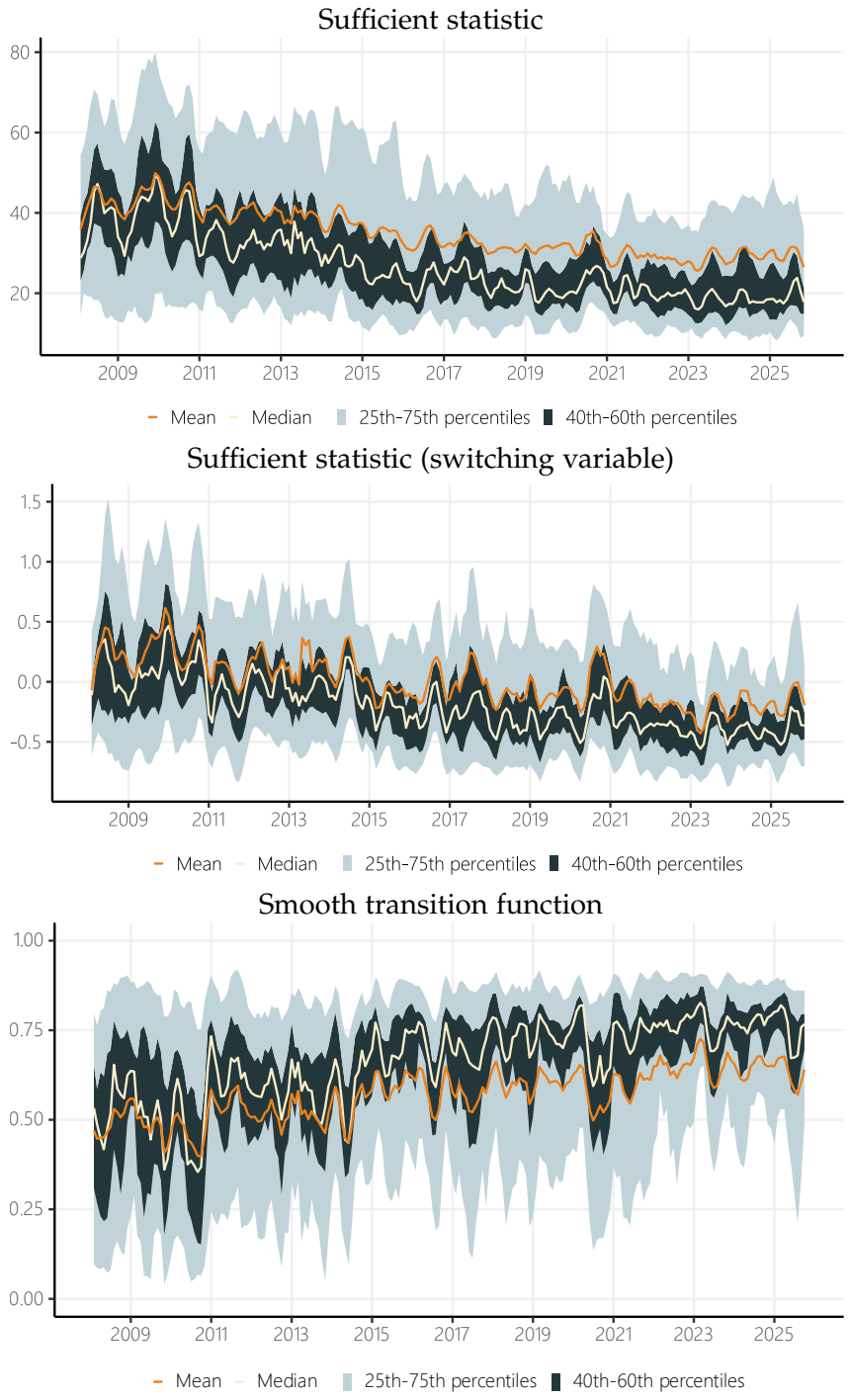


Notes: Impulse response functions (solid lines) of recomposed and counterfactual inflation rates to monetary policy shocks across sectors estimated using panel linear local projections and the sample of CPI microdata from January 2008 to December 2025 that includes price changes due to temporary sales and product substitutions. The models are specified in Equation (2). The rows represent the IRFs across sectors: food, NEIG, energy, and services. The columns correspond to recomposed inflation ($\hat{\pi}_{i,t}$) and counterfactual inflation rates: assuming constant size and frequency of price changes ($\hat{\pi}_{i,t}|_{\Delta p}$ and $\hat{\pi}_{i,t}|_{f}$), and constant sizes and frequencies of price increases and decreases ($\hat{\pi}_{i,t}|_{\Delta p^+,\Delta p^-}$ and $\hat{\pi}_{i,t}|_{f^+,f^-}$). The dark- and light-gray areas are the 68 and 90 percent confidence bands, respectively.

E.9 *State variables and resulting smooth transition functions*

Figure E.16 displays the distribution of the sufficient statistic $z_{i,t}$, its standardized counterpart used as the switching variable in the nonlinear local projections, and the resulting smooth transition function $F(z_{i,t})$, all aggregated across items using CPI expenditure weights.

Figure E.16. Distribution of smooth transition functions



Notes: The top panel shows the distribution of the sufficient statistic $z_{i,t} = \text{Kur}(\Delta p_{i,t})/f_{i,t}$, as defined in Equation (3). The middle panel shows the switching variable, obtained by standardizing $z_{i,t}$ for each item by subtracting its mean $\mu_{i,z}$ and dividing by its standard deviation $\sigma_{i,z}$. The bottom panel shows the logistic smooth transition function $F(z_{i,t})$ defined in Equation (5), for which values close to zero (one) indicate periods of high (low) monetary non-neutrality, i.e., low (high) sufficient statistics. In all panels, moments are aggregated across items using CPI expenditure weights, plotted as three-month centered moving averages, and displayed as the mean (orange line), median (white line), 20th–40th percentile range (dark-shaded area), and interquartile range (light-shaded area). The parameterization uses $\gamma = 3$. Sample: January 2008 to December 2025, including price changes due to temporary sales and product substitutions.