How the Pandemic Era Changed Price-Setting

After years of facing resistance to price increases, firms found consumers learning to accept them — unhappily

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For consumers, the prices of goods and services may seem to emerge from a black box. But behind those prices are complex judgments that firms are making about demand and about the competition, often based on limited information. Pricing decisions may also reflect uncertain assessments of the future costs of inputs. On top of that are seemingly irrational factors, like consumers' common preference for prices ending in a "9," perceiving $29.99 as markedly more appealing than $30.

While price-setting is challenging even in normal times, shocks during the past few years, such as the pandemic and inflation, have made it harder. How did these changes affect price-setting? And are these changes defining a new normal, or are firms trending back to their old ways?

ECON 101 MEETS REALITY

Many people have their first exposure to the process of price-setting through an introductory economics class in college. There, price-setting is commonly taught in the context of "perfect competition," a world in which the process is almost mechanical: Price equals marginal cost, that is, the cost to make an additional unit.

But the world in which most firms operate is far different. For example, in perfect competition, numerous firms are selling identical products, so no individual firm is able to influence the market price. They are, in that sense, "price takers." While these assumptions may hold true in some markets, such as those for agricultural products, a firm's price-setting environment is often one in which it can influence prices. The market may be an oligopolistic one. The firm's product may be differentiated from other firms' offerings — whether in reality or simply in the perceptions of consumers, giving the firm some pricing power.

Moreover, the textbook model of perfect competition assumes that everyone in the market has complete information — about costs, competitors' prices, and customer demand, among other things. In reality, a firm may face many unknowns. Prominent among these: Predicting how customers' demand would change with different prices (known as price elasticity of demand) may require estimation and conjecture. The quest for information seems to be important in price-setting: University of Maryland economist Luminita Stevens found in a 2020 article in the *Review of Economic Studies* that a firm's choice of how much price-related information to acquire is itself a major factor in how it sets prices in response to shocks.

In practice, firms often look backward to gauge price-elasticity — a flawed approach, says Ellen Kan, a pricing and market strategy partner with the consulting firm Simon-Kucher.

"The most common scenario is that you see firms asking themselves, 'What happened in the past when we've changed prices?'" Kan says. "The issue with that is, obviously, you can only analyze the past to the extent that it covers ground of what has already been done before. A backward look is always going to be an extrapolation that may not necessarily hold true."

More sophisticated firms, she says, supplement the lessons of history with quantitative surveys and — especially in online environments — by testing different prices in the shopping process.

Another assumption of perfect competition is that firms can adjust their prices quickly and at no cost in response to changes in conditions. In reality, prices are often "sticky"; that is, price changes may cost money to carry out — whether, for instance, from the cost of printing new restaurant menus or replacing price signage on supermarket shelves. Such costs, known by economists as "menu costs," may in turn affect the frequency with which a firm changes its prices. Prices may also be rendered sticky by fixed-price contracts. (Price stickiness also has implications for monetary policy: Under most macroeconomic models, in the absence of sticky prices, changes in monetary policy affect only nominal values, such as nominal price levels and nominal interest rates, without affecting real economic activity.)

Moreover, the effect of a price increase on a firm's demand may be magnified by the fact that it may drive some customers away entirely. In a 2019 article in the *International Economic*

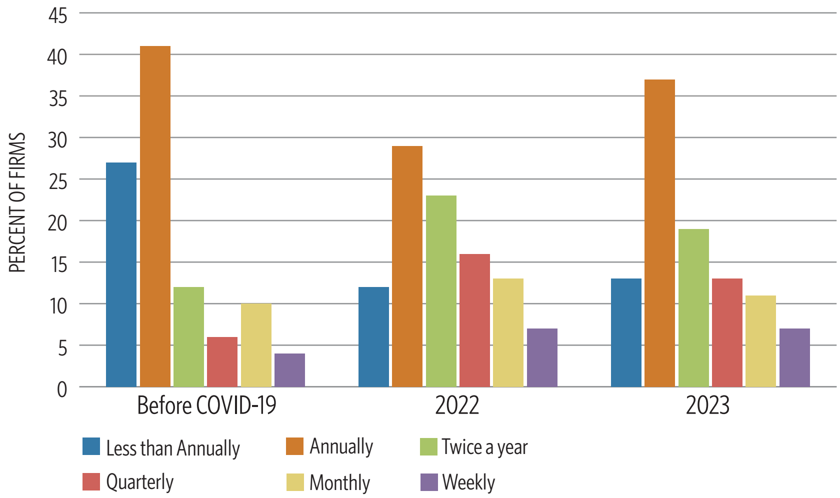
Review, Richmond Fed economist Nicholas Trachter, together with Luigi Paciello and Andrea Pozzi of the Einaudi Institute for Economics and Finance, looked at this question using data from a major U.S. supermarket chain and found that firms often refrain from fully passing through cost increases for this reason; they suggested that according to theory, the most productive firms have the greatest ability to pass through cost increases.

The cumulative effect of these complexities is that firms generally don't make price changes mechanically in response to changes in their costs. They must proceed under uncertainty about elasticity of demand and about their competitors' marginal costs — or even their own. They may engage in price discrimination — finding tactics for charging more to customers with a higher willingness to pay — or other pricing strategies. They may engage in strategic product differentiation, as in the case of a carmaker that charges disproportionately more for a trim level that is only modestly costlier to produce. They must weigh the possible benefits of frequent price changes against their menu costs—and the possible effects of price changes that cause customers to search for new suppliers.

And in March 2020, a pandemic added a new level of complexity to the process.

Firms Changed Prices More Often During the Pandemic

How often manufacturing and service-sector firms in the Fifth District adjust prices



NOTES: Data for 2023 is as of March 28, 2023. For the "Before COVID-19" category, firms were asked how often they changed prices generally before the pandemic rather than a specific year.
SOURCE: Federal Reserve Bank of Richmond Monthly Manufacturing and Service Sector Surveys.

PRICING IN THE PANDEMIC

The COVID-19 pandemic and its aftermath presented a challenging price-setting environment for firms. Supply shocks from disruptions to global trade raised the cost of key inputs, such as semiconductors. (See "Supply Chain Disruptions, Inflation, and the Fed," *Econ Focus*, Third Quarter 2022.) Consumer demand swung wildly. In the beginning of the pandemic when many in-person activities were suspended, households shifted spending (boosted by fiscal stimulus) from services to durable goods. Once the economy reopened, demand for services took off as households unleashed "revenge spending" on all the travel, dining out, and entertainment they had missed during lockdown. And inflation, which had been so low for years that it rarely factored into most businesses' pricing decisions, surged to levels not seen in four decades.

How did firms respond to these developments? Hugh Montag, an economist at the Bureau of Labor Statistics (BLS), and Daniel Villar, a senior economist at the Fed Board of Governors, examined this question in a recent *FEDS Notes* article. They used data from the BLS' CPI Commodities and Services Pricing Survey, which collects prices on roughly 94,000 products and services each month. Montag and Villar found that as inflation started rising in 2021, firms began updating their prices more often. By the first part of 2022, firms were changing prices about twice as often as they had before the start of the pandemic. Unsurprisingly, most of those changes were price increases.

"Firms were decreasing their prices about as often as they were before the pandemic, but they began increasing their prices a lot more frequently," says Montag.

At the same time, the absolute size of price changes during this period remained relatively stable. One of the potential costs of higher inflation if firms adjust prices infrequently is that prices drift further from their optimal level, leading to a less efficient allocation of resources through the price system. A sign of this inefficient price dispersion would be an increase in the absolute size of price changes, meaning firms change prices by larger amounts when updating in order to return to optimal levels. Montag and Villar's findings suggest that the inflation of recent years did not lead to more inefficient price dispersion, which is consistent with the findings of a 2018 article in the *Quarterly Journal of Economics* that examined price dispersion during the Great Inflation of the 1970s and 1980s.

Surveys support Montag and Villar's findings that firms updated prices more frequently during the runup of pandemic-era inflation. The Richmond Fed surveys manufacturing and service-sector firms in the Fifth District every month about business conditions, including changes in their prices.

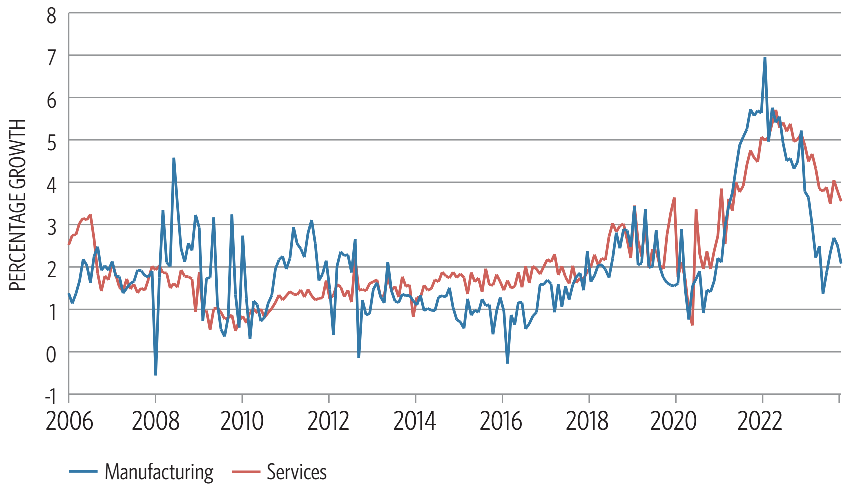
Before the pandemic, a little more than two-thirds of businesses said they changed their prices annually or less frequently. In 2022, the share of firms that changed prices twice a year nearly doubled and the share adjusting prices quarterly nearly tripled compared to pre-pandemic behavior. (See chart on previous page.)

During the years leading up to the pandemic, it was "very tricky to get a price increase across," says Kan. "A lot of consumer goods manufacturers, for example, were getting pressure from large retailers not to move their prices." But once costs started rising in the pandemic, some large firms succeeded in raising prices without driving customers away — inspiring other firms, Kan says.

"It created a follow-on effect where others decided, 'Wait, they're doing it, so we probably can, too.' That definitely was a shift. It almost made pricing an easier decision in some ways."

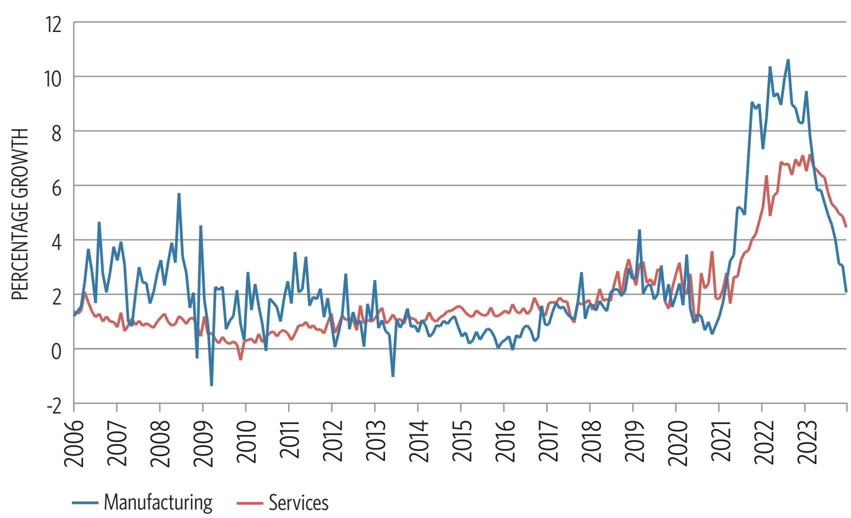
Returning to Normal?

Average 12-Month Price Growth Expectations



SOURCE: Federal Reserve Bank of Richmond
NOTE: Data reflect expected changes in prices firms expect to be paid for goods and services

Average Actual 12-Month Price Growth



SOURCE: Federal Reserve Bank of Richmond
NOTE: Data reflect actual changes in prices paid to firms for goods and services

Did some firms increase prices beyond their costs, taking advantage of the environment to increase their profits? This is a much harder question to answer. Markups — the difference between the prices charged for goods or services and their marginal costs — are hard to measure, and the results depend heavily on the assumptions researchers make. In a 2022 working paper, Mike Konczal and Niko Lusiani of the Roosevelt Institute, a progressive think tank, reported that corporate profits and markups soared in 2021 to their highest levels since the 1950s. They also found that larger firms with more market power before the pandemic were more likely to increase markups during the pandemic.

But other researchers have reached different conclusions. Berardino Palazzo, a principal economist at the Fed Board of Governors, argued in a recent *FEDS Notes* article that much of the growth in profit margins can be explained by the large fiscal and monetary stimulus enacted in response to the pandemic, rather than by price increases. Businesses, particularly small businesses, were the recipients of several subsidies in 2020 and 2021, significantly reducing their costs and boosting profits. At the same time, the Fed pushed interest rates to near zero, decreasing interest expenses for corporate borrowers.

"Corporate profit margins were not abnormally high in the aftermath of the COVID-19 pandemic, once fiscal and monetary interventions are accounted for," Palazzo concluded.

HAS THE PRICING FEVER BROKEN?

When inflation is low and stable, it is likely to be only a minor factor among the many factors firms might consider when

setting prices, along with strength of demand, wages and labor costs, competitors' prices, and maintaining steady profit margins. And given that inflation remained stable and averaged around 2 percent since the mid-1990s, it might be reasonable to assume that it had little bearing on prices for decades.

Is it possible that the U.S. economy will get back to an environment where businesses can make pricing decisions without considering inflation to the extent they have been in recent years? The answer, in part, depends on those firms' expectations about the future path of inflation. If they believe that it will slow and return to normal levels, businesses may no longer need to account for it in their pricing decisions, allowing them to focus their attention on the factors most immediate to them.

Indeed, economists Bartosz Maćkowiak of the European Central Bank and Mirko Wiederholt of Northwestern University argued in a 2009 *American Economic Review* article that when conditions that are unique to the firm are more variable or important than aggregate conditions — inflation, for example — pricing behavior will be based more on the idiosyncratic, firm-specific factors that firms can more readily observe.

This idea highlights a crucial relevant dimension of the Fed's ongoing commitment to returning to its 2 percent inflation target: It signals to businesses that they can expect reduced inflation over time, weakening the aggregate upward pressure on prices.

Recent survey research suggests that businesses are responding, adjusting their inflation expectations downward for the longer term. The Richmond Fed's monthly business survey found that as far back as October 2022 — seven months after the Fed began raising interest rates to curb inflation — they expected average inflation over a horizon of five years to be lower than what they expected in the coming 12 months. Also, recent waves of the survey have shown that firms that followed inflation closely as it rose are now paying less attention to it as it comes down.

Expectations of price growth — the percentage increase in prices that businesses receive from customers for goods and services — are also declining from their peak levels of 2021 and 2022. (See upper chart.) The most recent Richmond Fed survey fielded between late September and mid-October 2023 reports that within the Fifth District, average yearly price growth expectations in the manufacturing sector have fallen back to pre-pandemic levels. Expectations in the services sector have also dropped off but still remain elevated, perhaps due to lingering pent-up demand. The survey further showed that actual price growth is slowing in much the same fashion, with manufacturing price growth returning to pre-pandemic levels and with growth in services pricing dropping but remaining elevated. (See lower chart.)

Firms, however, are still reporting elevated costs. InUnison, a retailers' association in Richmond, fielded a small survey of local businesses in October: Around 82 percent of respondents reported increased costs of goods over the past three months, while nearly 77 percent stated that their general business expenses had increased over that period. Despite these increases, less than half — around 47 percent — of firms surveyed indicated that they had raised prices during that time. More broadly, a June 2023 report by the Atlanta Fed, the Cleveland Fed, and the New York Fed showed that between December 2022 and January 2023, firms passed on about 60 percent of their increased costs, absorbing the remaining 40 percent.

This reluctance to continue raising prices is echoed in the conversations Richmond Fed leaders are having throughout the Fifth District. Matthew Martin is the Bank's regional executive for the Carolinas, and based on his conversations with firm leaders, he suggests, "Price growth is still higher than it was before the COVID pandemic, but we're past this era where firms are able to put through big price increases." His counterpart in Maryland, Andy Bauer, has had similar discussions, although he notes that "firms are raising prices in order to restore margins or in some cases, they are still managing cost increases." Still, Bauer observes that "in many cases, cost pressures have settled and firms are holding steady on prices and are reluctant to consider price declines even when input costs moderate."

Consumer spending has remained elevated, but personal consumption expenditures may be slowing, as businesses are reporting that more customers are complaining about price increases, delaying purchases, and looking at receipts — all signs of their increasing sensitivity to prices.

In such an environment, deciding whether to raise prices to recover lost margins, manage costs, or create a cushion in the face of future uncertainty can be difficult, if not agonizing, for businesses that must balance those needs with the need to maintain a customer base.

"Managing pricing is really hard," lamented one Richmond retailer interviewed by InUnison. "When we raise prices, we're raising prices on our neighbors." **EF**

READINGS

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