



FEDERAL RESERVE BANK *of* CLEVELAND

2021 Annual Report



FEDERAL RESERVE BANK of CLEVELAND

The mission of the Center for Inflation Research is to improve the understanding of policymakers, researchers, and the public about inflation and the factors that influence its behavior. The Center is an initiative of the Federal Reserve Bank of Cleveland, www.clevelandfed.org.



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Executive Summary

In 2021, the Center for Inflation Research (CfIR) completed another successful year of advancing its objectives and strengthening its reputation as a leading resource on inflation during a period of heightened interest in inflation and accompanying issues among the public, policymakers, and researchers. The Center maintained its focus on generating insightful analysis on inflation issues, updating indicators and data related to inflation, producing quality research and promoting scholarly discourse, and contributing to a greater awareness and understanding of inflation. To complement a broader survey that focuses on consumers' views in the COVID-19 environment, the Center launched a new survey of consumer inflation expectations. The Center held its annual inflation conference, hosted events that invited the public into conversations about the fundamentals of inflation and the perspectives of inflation experts, and continued to engage its advisory council in meaningful dialog. The Center's inflation indicators were widely covered in the news media, and the Center was very active in discussing inflation developments and promoting its work through interviews with media outlets. As interest in inflation releases grew over the course of the year, Center staff, in partnership with the communications and marketing staff of the Federal Reserve Bank of Cleveland, worked to develop new communications strategies to promote data releases via social media. The ["Inflation 101" pages](#) of the [Center's website](#) were further enhanced to include three animated videos and a Q&A designed to further public understanding of key inflation issues.

Key accomplishments in 2021 follow.

Research. Cleveland Fed staff produced 18 inflation-related articles and papers documenting research findings in the Bank's *Economic Commentary* and working papers series. Some of the topics covered include the behavior of inflation and output during the pandemic, the predictive content of alternative inflation indicators, the properties of different rent inflation measures, and the redistributive effects of expected inflation. The Center initiated one new research project that is ongoing, a survey of consumers in the United States and other countries that assesses respondents' expectations for inflation.

Professional collaboration. Through several channels, the Center engaged researchers to present and discuss their latest work. In collaboration with the European Central Bank, the Center organized and cosponsored the Bank's signature annual Inflation: Drivers and Dynamics Conference. The Center also organized sessions at two external academic conferences. The Center hosted formal and informal visits by prominent researchers and shared its expertise with federal agencies, providing reviews on a Congressional Budget Office working paper on inflation expectations formation and a report produced by the US Government Accountability Office on the federal government's response to the pandemic and its impact on inflation indicators.

Programs. Center staff began a new series called *Cleveland Fed Conversations on Central Banking* that brings together individuals with diverse backgrounds and views on current and prospective policy issues. The Center also contributed to the Cleveland Fed's *FedTalk* series, events whose primary audience comprises members of the public, through a general presentation on inflation.

Education. The Center's "Inflation 101" webpages were expanded to include new graphic elements and multimedia features. The most significant addition was a suite of three animated inflation videos to make the basic concepts of inflation accessible to a broader audience: "[What Is Inflation?](#)" "[Why Should You Care about Inflation?](#)" and "[Why Does the Fed Care about](#)

[Inflation?](#)” The Center also produced a new Q&A section based on key issues identified by readers who were encouraged to submit additional topics of interest.

Awareness. As media attention increased its focus on inflation, the Center’s economists were interviewed in media outlets ranging from Bloomberg to the *Wall Street Journal*. Center staff worked with the Bank’s communications, media relations, and marketing teams to increase the visibility of its work and make this work more accessible to a wider audience. The Center continues to publish quarterly newsletters to subscribers and is expanding its use of social media by summarizing developments in the Center’s inflation indicators after their monthly releases. The subscriber mailing list added approximately 200 new subscribers in 2021, and subscribers now number approximately 500.

Center for Inflation Research 2021: Insights in a Year of Surging Inflation

The work of the Center for Inflation Research in 2021 was shaped in part by the marked acceleration in inflation that took place during the year. After largely running below the Federal Open Market Committee’s (FOMC’s) 2 percent target since 2012, inflation by the end of 2021 had posted the highest readings since the early 1980s. Also driving the work were questions about the nature of inflation that are at the center of active inflation research.

As the COVID-19 pandemic moved into its second year, a steady and dramatic increase in inflation started in spring 2021. The factors underlying the surge reflect the interaction of demand- and supply-side effects on inflation. Aggregate demand has grown at a robust pace in part because of generous fiscal support, accommodative monetary policy, and changes in spending patterns associated with the pandemic, with consumer spending notably shifting toward goods and away from services. Supply chain disruptions and bottlenecks emerged and intensified in the goods sector. While elevated inflation readings were initially driven by a limited number of items, such as new and used vehicles, by the end of the year, these readings were more broad-based across the goods and services that people buy.

The current high inflation environment has been at the center of considerable debate and

analysis, and the Center has focused particular attention on the inflation expectations of consumers. Because inflation expectations are a key determinant of the inflation process, it is important to monitor their behavior to determine if they are aligned with a central bank’s inflation objective or if they are showing evidence of becoming unanchored. Despite inflation expectations’ importance, measuring them can be problematic. To extend its approach to gathering insights through surveys, the Center launched a new survey of consumer inflation expectations that complements the Center’s broader [Consumers and COVID-19](#) survey work. A unique feature of the new survey is that it uses an indirect approach to infer inflation expectations by focusing on the respondents’ view of the changes in their incomes they believe will be needed to offset expected changes in the prices of the goods and services they purchase. Drawing on this survey work, Cleveland Fed researchers find there has been a significant increase in the measure of indirect consumer inflation expectations since early 2021. In addition, there is evidence at both the city and international levels that higher inflation experiences are associated with higher inflation expectations.

The pandemic has also made the task of gauging the inflation outlook more challenging. In response to this increased

difficulty, the Center has focused on evaluating various inflation indicators to determine which of these may be more informative about future inflation movements. Looking at survey-based measures, Cleveland Fed researchers find that the predictions of professional forecasters and businesses have tended to be more accurate than those of households and financial market participants. In the case of measures of underlying inflation, Center staff concluded that median PCE inflation and trimmed-mean PCE inflation are preferred to the core (excluding food and energy) PCE inflation measure based on a variety of criteria relevant for monetary policy deliberations and communications.

In addition to the topics described above, Cleveland Fed staff published new research on a variety of other inflation topics, including the impact of the semiconductor shortage on new car prices, issues related to the FOMC's shift to an average inflation targeting regime, the behavior of the inflation gap, the estimation of long-run equilibrium values of key macroeconomic variables, and

the construction of censored density forecasts. The inflation-related research presented at Center-sponsored academic forums in 2021 examined the Phillips curve, the formation of inflation expectations, and how the price-setting behavior of firms feeds into inflation.

Looking ahead, the Center will continue to address important questions that have emerged about inflation during the pandemic, along with other questions that remain unanswered. For example, median inflation and trimmed-mean inflation rates are affected by the skewness of the price change distribution of goods and services. The pandemic has witnessed a change in skewness, so it is important to determine how this shift has impacted the behavior of these measures of underlying inflation. Because effective communication of monetary policy allows for enhanced economic performance, the Center is interested in exploring mediums to gauge and improve the public's understanding of the FOMC's operational framework. These topics and others remain areas for future research and will continue to be featured at Center-sponsored conferences.

Center Leadership



Edward S. Knotek II
Senior Vice President



Robert Rich
Director



Mathieu Pedemonte
Research Economist



Ina Hajdini
Research Economist



Jean-Paul L'Huillier
Senior Research Economist

The Center reports to Edward S. Knotek II, senior vice president, and Robert Rich continues to serve as Center director. Raphael Schoenle departed as the deputy director of the Center in August of 2021 to return to Brandeis University, but he continues to engage with the Center as a visiting research economist. Mathieu Pedemonte, who has been contributing to the Center's work since August 2020, has been joined by Ina Hajdini in July 2021 and Jean-Paul L'Huillier in January 2022. In addition to these specialists in inflation, seven external experts from academia, central banking, and the private sector serve on the Center's advisory council and provide the Center with guidance and feedback.

The Center hosted meetings of its advisory council on May 24 and November 8, 2021. Meeting conversations focused on a review of the Center's accomplishments, a presentation of selected research by Center staff, discussions of current inflation-related issues and topics, the dynamics of inflation during the pandemic, the persistence of recent elevated inflation readings, and the inflation outlook.

Advisory Council Members, 2021

Olivier Coibion

Professor, University of Texas at Austin

Julia Coronado

President and Founder, MacroPolicy Perspectives
Clinical Associate Professor of Finance, University of Texas at Austin

Jon Faust

Senior Special Advisor to the Chair of the Federal Reserve

Emi Nakamura

Chancellor's Professor of Economics, University of California, Berkeley

Frank Smets

Director General of the Directorate General Research, European Central Bank

Fellow, British Academy

Vice President and President Elect, European Economic Association

Silvana Tenreyro

Professor, London School of Economics and Political Science
Member, Bank of England's Monetary Policy Committee

Mark W. Watson

Howard Harrison and Gabrielle Snyder Beck
Professor of Economics and Public Affairs,
Princeton University

Research

Outlined below is a selection of the inflation-related *Economic Commentary* articles and working papers that were produced in 2021 and long-term research projects maintained during the year.

Economic Commentary**[Whose Inflation Expectations Best Predict Inflation?](#)**

Randal J. Verbrugge and Saeed Zaman

This article examines the predictive relationship between various measures of inflation expectations and future inflation. The findings suggest that the expectations of professional economists and of businesses have tended to provide more accurate predictions of future inflation than the expectations of households and of financial market participants, although forecasts coming from a relatively simple and popular benchmark inflation forecasting model have historically been roughly as accurate as the expectations of businesses and professional economists.

[Semiconductor Shortages and Vehicle Production and Prices](#)

Pawel Krolikowski and Kristoph Naggert

This article investigates the cause of declines in vehicle production since the beginning of the pandemic recession. The authors find that demand for new vehicles has remained strong despite higher prices and sharply lower inventories, but materials shortages – including for semiconductors – have weighed on the

supply of new vehicles. The materials shortages and the effects on new car prices are expected to be temporary.

[Flexible Average Inflation Targeting and Inflation Expectations: A Look at the Reaction by Professional Forecasters](#)

Kristoph Naggert, Robert Rich, and Joseph Tracy

This article examines the response of longer-run inflation expectations to the Federal Open Market Committee's announced switch to a flexible average inflation-targeting approach. The authors find preliminary evidence consistent with the intended effects of the change in the monetary policy framework such as an upward shift in the lower end of the distribution of inflation expectations and a stronger anchoring of expectations around the 2 percent policy objective. These conclusions, however, should be viewed as tentative based on the response to prior changes in monetary policy frameworks, and further monitoring is warranted.

[Inflation: Drivers and Dynamics 2020
Conference Summary](#)

Edward S. Knotek II, Robert Rich, Raphael Schoenle, Philippe Andrade, Marco Del Negro, Colin Hottman, Christian Höynck, Matthias Meier, Giovanni Ricco, Elisa Rubbo, Daniel Villar, and Michael Weber

This article summarizes the papers presented at the Federal Reserve Bank of Cleveland's 2020 installment of its annual conference on inflation. The conference engaged academics and policymakers on discussions of recent research in the realm of inflation, including on empirical Phillips curves, networks and Phillips curves, the formation of inflation expectations, and price-setting behavior and inflation.

[Inflation: Drivers and Dynamics 2020
CEBRA Annual Meeting Session
Summary](#)

Edward S. Knotek II, Robert Rich, Raphael Schoenle, Michael Lamla, Emanuel Moench, and Michael Weber

In September of 2020, the Center for Inflation Research sponsored a session at the 2020 meeting of the Central Bank Research Association (CEBRA), an annual event that provides a forum for researchers to present their work on inflation dynamics in the context of monetary policy. This article summarizes the papers presented at this conference session, which focused on inflation expectations and the price-setting behavior of firms.

Working Papers

[News and Uncertainty about COVID-19:
Survey Evidence and Short-Run
Economic Impact](#)

Alexander Dietrich, Keith Kuester, Gernot Müller, and Raphael Schoenle

The authors conducted a daily survey on consumer perceptions of the US economy's response to the COVID-19 pandemic between March 2020 and July 2021. The results indicate that consumer perceptions regarding output and inflation displayed rapid changes and that pervasive uncertainty amplified the recession caused by the pandemic. Differential perceptions about monetary policy can also explain why there is agreement between consumers and professional forecasters about the recessionary impact of the pandemic but divergent views about its inflationary impact.

[Average Inflation Targeting and
Household Expectations](#)

Olivier Coibion, Yuriy Gorodnichenko, Edward S. Knotek II, and Raphael Schoenle

Using a daily survey of US households, the authors studied how the Federal Reserve's announcement of its new strategy of average inflation targeting affected households' expectations. The findings suggest that those who heard about the announcement early on were no more likely to correctly identify the Federal Reserve's new strategy than others, nor were their expectations different. Even one year after the announcement, US households remained mostly unaware of the change in strategy or its implications.

[Wealth Effects, Price Markups, and the Neo-Fisherian Hypothesis](#)

Marco Airaudo and Ina Hajdini

This paper focuses on the neo-Fisherian hypothesis in which a nominal shock to the economy generates a positive co-movement between inflation and the nominal interest rate. The authors examine the implications of introducing a particular class of non-separable consumption-labor preferences into a standard New Keynesian model. The results indicate that the neo-Fisherian hypothesis is more prominent when there are weaker wealth effects on labor supply and smaller price-to-wage markups. The analysis also investigates the stabilizing properties of Taylor rules within this modified modeling framework.

[Liquidity, Capital Pledgeability and Inflation Redistribution](#)

Paola Boel, Julián P. Díaz, and Daria Finocchiaro

This paper evaluates the redistributive effects of expected inflation when borrowing is collateralized. The findings suggest that expected inflation is detrimental to capital accumulation. Consequently, expected inflation also affects borrowing and lending when collateral constraints are present and thereby generates redistributive effects through credit. The authors show that the latter channel is regressive because the decline in borrowers' capital from inflation is greater when capital is used as collateral.

[A Unified Framework to Estimate Macroeconomic Stars](#)

Saeed Zaman

This paper presents estimates for a range of macroeconomic “stars” – the unobserved long-run equilibrium levels of variables such as output, the

unemployment rate, labor productivity, the real rate of interest, price inflation, and nominal wage inflation. These estimates are derived from a model that jointly estimates stars and their determinants, implements a richer set of features, and allows for a direct connection between stars and long-term survey expectations.

[Average Inflation Targeting: Time Inconsistency and Intentional Ambiguity](#)

Chengcheng Jia and Jing Cynthia Wu

This paper evaluates the implications of the Federal Reserve's policy framework of average inflation targeting, which seeks to achieve an average rate of inflation over longer periods rather than seeking to stabilize inflation in every single period. The authors demonstrate that ambiguous communication of the horizon over which this average inflation target is more desirable because of its flexibility and helps the central bank gain credibility and improve outcomes in the long run.

[The Real Effects of Monetary Shocks: Evidence from Micro Pricing Moments](#)

Gee Hee Hong, Matthew Klepacz, Ernesto Pasten, and Raphael Schoenle

The authors examine eight micro pricing moments to gauge their informativeness for the non-neutrality of monetary policy shocks. The analysis considers alternative measures of monetary non-neutrality and a multitude of regression specifications. The results indicate that frequency of price changes is the only robustly informative pricing moment for monetary non-neutrality. There is also evidence that non-pricing moments such as profit rates and the persistence of sectoral shocks are informative about monetary non-neutrality. The empirical findings also provide guidance on future modeling efforts.

Censored Density Forecasts: Production and Evaluation

James Mitchell and Martin Weale

This paper develops methods for the production and evaluation of censored density forecasts, proposing new methods that allow for the fitting of a general density to the inner region of observations. The authors also introduce a new test for calibration of censored density forecasts and apply it to historical forecast errors from the Federal Reserve Board and the Monetary Policy Committee at the Bank of England. The results highlight the usefulness of the censored density forecasts to assess risks after significant shocks such as the global financial crisis or the COVID-19 pandemic.

Is It Time to Reassess the Focal Role of Core PCE Inflation?

Randal J. Verbrugge

This paper reviews the history of core personal consumption expenditures (PCE) inflation and the rationale behind excluding items with volatile prices to better highlight the underlying trend in inflation. The findings suggest core PCE inflation is problematic because it is too narrow in the removal of volatile components. In addition, the excluded and included components in core PCE inflation contain both persistent trends and transitory movements that can cause it to deviate notably from trend inflation. The paper also examines trimmed-mean PCE inflation and median PCE inflation and concludes that these measures are preferred to core PCE inflation based on a variety of considerations relevant for monetary policy deliberations and communications.

Late Payment Fees and Nonpayment in Rental Markets, and Implications for Inflation Measurement: Theoretical Considerations and Evidence

Wesley Janson and Randal J. Verbrugge

Statistical agencies track rental expenditures for use in the national accounts and in consumer price indexes (CPIs). As such, statistical agencies should include late payment fees and nonpayment in rent. In the US context, late payment fees are excluded from the CPI. Ostensibly, nonpayment of rent is included in the US CPI; but its treatment is deficient, and this paper demonstrates that small variations in nonpayment could lead to large swings in shelter inflation in theory, though they do not in practice.

All Forecasters Are Not the Same: Time-Varying Predictive Ability across Forecast Environments

Robert Rich and Joseph Tracy

This paper evaluates data from the European Central Bank's Survey of Professional Forecasters to investigate whether participants display equal predictive performance. The authors find systematic differences in the forecast accuracy of participants characterized by some forecasters displaying better relative predictive performance in tranquil environments and other forecasters displaying better relative predictive performance in volatile environments. This finding is robust across the type of forecast, target variable, and horizon. Taken together, the results argue for the development of expectations models that feature persistent heterogeneity.

Inflation Gap Persistence, Indeterminacy, and Monetary Policy

Yasuo Hirose, Takushi Kurozumi, and Willem Van Zandweghe

Empirical research has documented a decline in the persistence of the gap between inflation and its trend following the Volcker disinflation, although there are competing views on the source of this decline. This paper examines the source

Location, Location, Structure Type: Rent Divergence within Neighborhoods

Brian Adams and Randal J. Verbrugge

Housing rents represent a significant share of household budgets and make a large contribution to overall inflation. The authors find that rent inflation rates for different types of housing units can diverge, even in the same neighborhoods, with rents for apartments in the United

by estimating a DSGE model both before and after the Volcker disinflation that allows for indeterminacy. The authors find that either the Federal Reserve's transition from a passive to an active monetary policy response to the inflation gap or a decrease in firms' probability of price changes can account for the decline in the persistence of the inflation gap by ruling out indeterminacy that generates persistent dynamics of the economy. States outpacing those for detached housing during the 2010s (and the opposite during the early stages of the COVID pandemic). These results imply a segmented housing market. There is additional evidence presented suggesting other potential bias in various rent indices. Further, the results raise questions about potential bias in official rent-based price indices.

Long-term Research Projects

Consumers and COVID-19. The Center continues to conduct [daily surveys](#) of consumers to assess their expectations for inflation and economic growth in the midst of the COVID-19 pandemic.

The survey results enabled publication of the *Economic Commentary* "[Expected Post-Pandemic Consumption and Scarred Expectations from COVID-19](#)," by Edward S. Knotek II, Michael McMain, Raphael Schoenle, Alexander Dietrich, Kristian Ove R. Myrseth, and Michael Weber. The article examines the evolution of consumer expectations for post-pandemic spending on services that were dramatically curtailed by the pandemic. The results suggest that while consumers with higher incomes plan to sharply return to or exceed prepandemic spending levels, there is evidence of a notable

scarring of expectations among older Americans.

Inflation Expectations. The Center continued its work with the survey company Morning Consult and launched a short weekly survey of US consumers' inflation expectations in February. The same survey instrument was introduced in 14 foreign countries in April and is conducted monthly.

Firms' Price-Setting Behaviors. Researchers from the Center, together with researchers at the Atlanta and New York Reserve Banks, are refining a questionnaire that is being used to interview company representatives about their price-setting behavior. This project is being undertaken as part of a long-term effort to better understand and document firms' pricing practices.

Professional Collaboration

The Center sponsored the following events and invited the following scholars to visit and present their latest work and meet with Cleveland Fed research staff.

Events

Inflation: Drivers and Dynamics Conference 2021.

The Center hosted its sixth installment of the Cleveland Fed's signature inflation conference, the third since the Center made it an annual event. The 2021 conference was cosponsored by the Center and the European Central Bank, and it was held virtually on October 7-8. The conference featured 10 papers, two keynote presentations, and remarks by Loretta J. Mester, president and chief executive officer of the Federal Reserve Bank of Cleveland; Isabel Schnabel, a member of the executive board of the European Central Bank; and Philip Lane, a member of the executive board of the European Central Bank. The program and videos of the sessions were posted to the Center's [conference website](#).

Central Bank Research Association 2021.

The Center organized a session and sponsored a poster session on inflation during the [2021 meeting of the Central Bank Research Association](#) (CEBRA), hosted by the MIT Golub Center for Finance and Policy and held virtually July 7-9. The presentation session featured four papers on inflation drivers and dynamics. The poster session featured six papers on the inflation process, monetary policy, and communication. Videos for papers presented were posted to the Center's [conference website](#).

41st International Symposium on Forecasting.

Cleveland Fed researchers presented two papers at the 41st International Symposium on Forecasting, hosted virtually on June 27-30.

- James Mitchell presented his paper "Constructing Density Forecasts from Quantile Regressions: Multimodality in Macroeconomic Dynamics."
- Robert Rich presented "[All Forecasters Are Not the Same: Time-Varying Predictive Ability across Forecast Environments](#)."

Computational and Financial Econometrics 2021.

The Center organized a session at the [15th International Conference on Computational and Financial Econometrics](#) (CFE), a hybrid event sponsored by King's College London held December 18-20. The session featured presentations on four papers on the topic of inflation dynamics, two of which were coauthored by Center economists.

International Association for Applied Econometrics 2021.

Staff from the Center and their colleagues in the Cleveland Fed Research Department made contributions to the [2021 Annual Conference of the International Association for Applied Econometrics](#), which was organized and hosted virtually by the Erasmus School of Economics on June 22-25.

- Edward S. Knotek II presented "[Real-Time Density Nowcasts of US Inflation: A Model-Combination Approach](#)" at a session on forecast combination.

- Paolo Gelain moderated a session on oil and commodity markets during which he presented his paper “The Transmission of Oil Price Shocks through the US Credit Sector.”
- Robert Rich presented “[All Forecasters Are Not the Same: Time-Varying Predictive Ability across Forecast Environments](#),” and James Mitchell presented “[Reconciled Estimates of Monthly GDP in the US](#)” at a session on forecasting.
- Randal J. Verbrugge presented “[Thinking Outside the Box: Do SPF Respondents Have Anchored Inflation Expectations?](#)” at a session on prices, inflation, and expectations.

Society for Computational Economics’ 27th international conference on Computing in Economics and Finance.

The Society for Computational Economics hosted its annual international conference on [Computing in Economics and Finance](#) virtually on June 16–18, 2021.

- Paolo Gelain presented “[Monetary Policy with Judgment](#),” and “The Transmission of Oil Price Shocks through the US Credit Sector” was presented by his coauthor Marco Lorusso.
- Willem Van Zandweghe presented “[Inflation Gap Persistence, Indeterminacy, and Monetary Policy](#).”
- Saeed Zaman presented his paper “[A Unified Framework to Estimate Macroeconomic Stars](#).”

Engagement with the Federal Reserve System Board of Governors

Center staff met with the Federal Reserve Board of Governors’ then-Vice Chair Richard Clarida, sharing with him the Center’s inflation-related research projects.

Visitors

Klaus Adam

Professor of Economics, University of Mannheim

Mark Bills

Hazel Fyfe Professor in Economics, University of Rochester

Timothy Cogley

Professor of Economics at New York University

Javier Cravino

Assistant Professor of Economics at the University of Michigan and Faculty Research Fellow at the National Bureau of Economic Research

Michael Clements

Professor of Econometrics, International Capital Market Association Centre, Henley Business School, University of Reading

Olivier Coibion

Professor of Economics, University of Texas at Austin

Steven J. Davis

William H. Abbott Distinguished Service Professor of International Business and Economics, University of Chicago Booth School of Business

Yuriy Gorodnichenko

Quantedge Presidential Chair in Economics, University of California, Berkeley

Tatevik Sekhposyan

Associate Professor of Macroeconomics at the Texas A&M University

Michael Weber

Associate Professor of Finance, University of Chicago Booth School of Business

Education

The Center implemented further enhancements to its "[Inflation 101](#)" webpages to ensure the content is broadly accessible to the widest possible audience.

Inflation videos. Center staff worked with a cross-functional team and an external vendor to develop several short videos explaining

basic inflation concepts.

Enhancements to "Inflation 101" content.

The Center worked with a cross-functional team to implement further enhancements to the "Inflation 101" pages, including a Q&A document to answer some current inflation questions.

Programs

Cleveland Fed Conversations on Central Banking. The Center contributed to the launch of the *Cleveland Fed Conversations on Central Banking* series, which provides a forum to convene experts on topics important to central bankers. The events feature opening remarks by Loretta J. Mester, president and chief executive officer of the Federal Reserve Bank of Cleveland, followed by two to three distinguished panelists who provide short presentations. Each event concludes with general discussion and a Q&A session. The Center hosted sessions on March 3, May 24, and [August 10](#).

FedTalk. The Cleveland Fed's *FedTalk* series creates opportunities for Bank experts to engage with industry experts, local businesses, community organizations, policymakers, and engaged citizens to discuss various issues. On July 15, Robert Rich delivered a presentation on [inflation](#) that included a review of the definition and measures of inflation, a discussion of the inflation process and its determinants, and the behavior of inflation during the pandemic.

Awareness

Center staff continued to build awareness of the Center throughout 2021.

Media Interviews

Cleveland Fed economists were interviewed in various media outlets. A list of the interviews follows.

Edward S. Knotek II

- MNI Market News, discussing inflation developments.

Robert Rich

- *Wall Street Journal*, on median CPI and trimmed-mean CPI inflation.
- *PBS NewsHour*, discussing the trends and economic forces influencing inflation today.
- Bloomberg, discussing current inflation developments.
- MNI Market News, discussing movements in measures of inflation expectations and the inflation outlook.
- The Balance, explaining the use of median CPI as an alternative to core CPI.

Randal J. Verbrugge

- Bloomberg, discussing difficulties in measuring CPI inflation brought on by the pandemic.
- MNI Market News, discussing changes to how the calculation of CPI takes into account owner's equivalent rent.
- *Economist*, discussing owner's equivalent rent, the implicit cost to rent a home.

Additional Coverage

- Vox, quoted Raphael Schoenle discussing possible changes in the behavior of the Phillips curve.
- Multiple sources, including Bloomberg, *Barron's*, the *Economist*, the *Financial Times*, *MarketWatch*, MNI Market News, the *National Review*, the *New York Times*, *Reuters*, the *Wall Street Journal* cited the Center's inflation indicators and data throughout the year.
- Inflation-related research was cited in multiple venues, including the *New York Times*.

Marketing plan. Center staff worked with the Bank's communications and marketing teams

to develop a plan for achieving greater visibility for the Center and a wider audience for its research and data products. As part of this initiative, the Center published three new animated videos highlighting what inflation is and why it matters and began to send out regular social media posts that provided additional insights and commentary coinciding with monthly CPI and PCE inflation data releases during the quarter.

Communications. Center staff produced communications for the public through data releases, an annual report, and the Center's quarterly newsletter.

Data releases. Center staff released data updates for four inflation indicators throughout the year: the median consumer price index (CPI), median PCE inflation, inflation expectations, and inflation nowcasting.

Annual Report. The Center produced an annual report for 2020 and posted the executive summary on its webpage.

CfIR Newsletter. The Center published its quarterly newsletter, which contains descriptions of and links to recent research papers, information about upcoming events, and news of Center developments such as the inflation videos. The mailing list added approximately 200 new subscribers in 2021, for a total of approximately 500 subscribers.

Looking ahead to 2022, the Center plans to continue to build on its recent successes by contributing to policy conversations about inflation, conducting research on inflation and its determinants, organizing conferences, developing new data products, and providing new resources on the website to inform the public about inflation.