CHANGING INFLATION DYNAMICS, EVOLVING MONETARY POLICY: AN OVERVIEW

Gonzalo Castex
University of New South Wales

Jordi Galí
CREI - Universitat Pompeu Fabra- Barcelona GSE

Diego Saravia[*]
Proficio Investment, Argentina

Understanding the dynamics of inflation has become an important challenge for both policymakers and researchers over the past decade. Empirical models linking inflation and economic activity—versions of the so-called Phillips curve—have failed to account for the behavior of inflation in many advanced economies. In particular, inflation in the U.S. and other countries was higher during the 2008-2009 Great Recession than the conventional empirical Phillips curve would imply. As noted by some economists, this "missing deflation" phenomenon may have already started in the mid-2000s. Just as puzzling, during the subsequent recovery, inflation has remained subdued relative to the predictions generated by existing models, despite the aggressive expansionary monetary policies implemented in many advanced economies.

Economists have labeled the previous developments the "twin puzzle". A number of hypotheses to explain these unusual inflation dynamics have been put forward, with significant implications for the conduct of monetary policy. The XXII Annual Conference of the Central Bank of Chile gathered several researchers and policymakers to discuss and analyze the causes and consequences of these changing inflation dynamics, their potential policy implications, and the challenges they represent for central banks.

The eight papers presented and discussed at the XXII Annual Conference can be found in the present volume. Their content spans a wide range of issues regarding inflation and its changing relationship with economic activity. Several articles document the weakened relationship between real activity and prices. Some authors propose alternative measures of inflation for which the link with real activity seems restored. Other articles explore the strength of the Phillips relationship in specific sectors and countries, and conditional on the nature of the shocks driving economic fluctuations.

Next we provide a brief summary of the papers included in this volume.

In "The Passthrough of Large Cost Shocks in an Inflationary Economy," Fernando Álvarez and Andy Neumeyer analyze several episodes involving large changes in the nominal price of inputs in Argentina over 2012–2018 by using microprice data for the city of Buenos Aires. They focus on input-price changes resulting from large changes in regulated prices or exchange rates. They find a high short-term pass-through to prices. They compare the observed price dynamics to the predictions of a menu-cost model of price setting, where firms face both idiosyncratic and aggregate cost shocks. They show that the evidence and theory can be reconciled if both large shocks and a high underlying inflation are assumed. By contrast, the authors argue, neither flexible-price models nor models with time-dependent price setting can be easily reconciled with the evidence.

In "The Nonpuzzling Behavior of Median Inflation," Laurence Ball and Sandeep Mazumder analyze the performance of the U.S. Phillips curve since the Great Recession of 2008–2009, with a special focus on the 2017–2018 period. The authors propose an alternative measure of inflation for which there is no sign of breakdown in the Phillips curve relationship. Their proposed measure is the weighted median of industry inflation rates, after excluding food and energy sectors. This measure is argued to filter out large relative-price changes unrelated to aggregate forces. It is also less volatile than traditional core inflation. And most importantly, it displays a stronger, largely unbroken relationship with the unemployment rate.

In "The Link between Labor Cost Inflation and Price Inflation in the Euro Area," Elena Bobeica, Matteo Ciccarelli, and Isabel Vanteenkiste document the strong relationship between price inflation and labor costs in Europe. Their analysis focuses on different economic sectors (construction, manufacture, services) in four main economies (Germany, France, Italy, and Spain) by using quarterly data

from 1981Q1 to 2018Q1. The authors estimate a structural vector autoregression (VAR) to understand the high frequency relationship between labor costs and price inflation. They document that this relationship depends on the state the economy and the type of shock that the economy is subject to. The interpretation of their finding is related to the cost-push/price-markup view of the inflationary process. They find that the passthrough is highest in the construction sector in France, services in Germany and Italy, and manufacturing in Spain. Their findings shed light on the circumstances under which labor costs are the main driver of inflation.

In "Has the U.S. Wage Phillips Curve Flattened? A Semi-Structural Exploration," Jordi Galí and Luca Gambetti start by documenting the decline in recent years in the estimated slope coefficient of a reduced-form wage Phillips curve for the U.S. economy, as well as the shrinking role of lagged price inflation in the determination of wage inflation. They provide estimates of a conditional wage Phillips curve, based on a structural decomposition of wage, price, and unemployment data generated by a VAR with time-varying coefficients, identified by a combination of long-run and sign restrictions. Their estimates show that the key qualitative findings from the unconditional reduced-form regressions also emerge in the conditional evidence, thus suggesting that they are not entirely driven by endogeneity problems or possible changes over time in the importance of wage-markup shocks. The conditional evidence, however, suggests that actual changes in the slope of the wage Phillips curve may not have been as large as implied by the unconditional estimates.

In "Trade Exposure and the Evolution of Inflation Dynamics," Simon Gilchrist and Egon Zakrajšek analyze the potential role played by globalization as a factor behind the weakening of the link between price inflation and economic activity. They use a panel of industry-level data for the U.S. economy, with information on prices, wages, output, and employment. Their data allows them to exploit cross-sectional heterogeneity and to control for aggregate dimensions for inflation and economic activity. They focus on comovements between inflation and measures of resource utilization driven by disturbances to the financial intermediation process, a specific form of aggregate demand shocks. Their analysis points to a significant effect of international trade exposure on the responsiveness of inflation to economic activity at the industry level, with the Phillips curve slope coefficient being about three times larger for low trade intensity industries as compared with their high trade intensity counterparts.

In "The Supply-Side Origins of U.S. Inflation," Bart Hobijn argues that the weak Phillips relationship observed in recent years can be explained by the coexistence of demand and supply shocks. He argues that the monetary policy transmission remains valid once we allow monetary policy to affect also the short-run aggregate supply. The author uses growth-accounting techniques to decompose the sources of U.S. inflation at different horizons. His analysis suggests that nearly half of the variance of inflation is driven by changes in the price of imports, with oil being one of the most important factors. An important message of the paper is that policymakers have to think beyond the need to stabilize aggregate demand in order to avoid fluctuations in inflation.

In "Inflation Globally," Òscar Jordà and Fernanda Nechio address two important issues. First, they seek to understand the global trends of inflation after the financial crisis. Secondly, they assess whether tighter credit conditions affect inflation. The authors use a long panel database (20 years, quarterly data) including 45 countries (advanced and emerging economies). The identification of the Phillips curve is not trivial—if output gap is correlated to supply shocks, the estimation may be affected by simultaneity bias. To deal with this issue, the authors adopt an instrumental-variable approach by using the Germany or the U.S. interest rate as an instrument for the corresponding interest rate in countries with an exchange-rate peg. As the authors note, observed changes in the Phillips curve may be spuriously attributed to the crisis even if they have a different origin. To assess this possibility, Jordà and Nechio pursue a diff-in-diff approach by using, as a treated group, a list of countries that were affected by the crisis and, as a control group, a list of countries that were not affected by the crisis. They find that inflation has declined globally, while at the same time is now more forward-looking. They provide mixed evidence on the hypothesis that the missing deflation was caused by firms facing credit constrains being forced to raise prices when demand was low. They document a gradual change in the Phillips curve, with an increasing weight on expected inflation and a declining weight on backward-looking terms. That development seems to affect all economies, regardless of their exposure to the financial crisis.

The last paper in the volume is "Trend, Seasonal, and Sectorial Inflation in the Euro Area", by James H. Stock and Mark W. Watson. They estimate an unobserved components model with stochastic volatility for euro-area inflation. Their goal is to come up with a measure of underlying or trend inflation that is cleansed from seasonal

and irregular components. The authors first use a univariate model to decompose inflation into its trend, seasonal, and irregular components. A drawback of the univariate approach is that the resulting estimates of trend inflation are highly imprecise. This motivates the analysis of a multivariate unobserved components model that exploits the heterogeneity in the time-series properties of 13 sectoral inflation measures, while allowing for stochastic volatility in the seasonal components. By estimating a multivariate model, the authors can obtain much precise estimates for the trend component of inflation. Trend inflation is shown to display a substantial correlation with measures of cyclical activity.