Revisiting the Failure of the Phillips Curve after COVID-19: A 2025 Update

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Abstract

The COVID-19 pandemic has reignited fundamental debates about the stability, slope, and empirical relevance of the Phillips Curve. While the relationship between inflation and economic slack deteriorated during the pandemic, recent scholarship offers new insights that complicate simplified narratives about the curve's failure. This meta-analysis synthesizes evidence from pre-COVID panel studies and the rapidly growing body of post-2020 research. Earlier cross-country analyses illustrate that the inflation–unemployment relationship is highly conditional on macroeconomic tranquillity, institutional structure, and inflation expectations, particularly during recessionary periods. Post-COVID research advances this perspective by uncovering substantial nonlinearities, structural breaks, frequency-dependent dynamics, anchored expectation effects, trend inflation interactions, and regional heterogeneity. The pandemic shock provides an empirical environment in which many conventional mechanisms behave atypically, yet recent studies show that the Phillips relationship re-emerges once expectations stabilize and supply disruptions ease. Integrating evidence from hybrid NKPC models, time-varying instrumental variable techniques, Bayesian structural break approaches, spatial panels, sectoral analyses, and explainable machine learning, this study concludes that the Phillips Curve has neither collapsed nor returned unchanged. Instead, its apparent instability reflects the interaction between forward-looking expectations, inflation persistence, structural labor-market transformations, capacity constraints, and global supply linkages. These findings reaffirm the importance of hybrid modeling frameworks and caution against interpreting reduced-form flattening as evidence of structural irrelevance.

Keywords: Phillips Curve; Inflation dynamics; COVID-19; Expectation anchoring; Hybrid NKPC; Nonlinearities; Structural breaks; Macroeconomic adjustment

1 Introduction

The Phillips Curve continues to sit at the center of macroeconomic debates, partly because its empirical performance varies widely across time, countries,

and business cycle regimes. Although the original formulation suggests a stable trade-off between inflation and unemployment, subsequent decades of research show that this relationship rarely behaves in a uniform or predictable manner. Prior to the COVID-19 pandemic, the literature already reported that the Phillips mechanism frequently weakens or collapses during economic downturns, particularly when inflation is highly inertial or when expectations are poorly anchored. This evidence is particularly visible in cross-country analyses covering both tranquil and recessionary periods. The pandemic period has introduced a new empirical environment in which inflation dynamics diverged sharply from historical patterns. Many economies experienced a deep contraction in 2020 without the degree of disinflation predicted by traditional models, a phenomenon that resembles the missing disinflation episodes documented after the Great Recession. Subsequent inflation surges during 2021–2022, despite lingering slack in labor markets, raised questions about whether the Phillips Curve had steepened, flattened further, or ceased to operate altogether. Scholars now reassess the structural properties of inflation equations and propose new interpretations of inflation persistence, the role of global supply disruptions, the influence of expectation anchoring, and the increasing relevance of nonlinear and frequency-specific adjustment processes. This meta-analysis revisits the perceived failure of the Phillips relationship in light of recent evidence. It builds directly on earlier cross-country work that distinguishes between tranquil and recessionary regimes (Y. Sovbetov, 2019; Y. Sovbetov & Kaplan, 2019a, 2019b) and situates these findings in dialogue with major post-COVID contributions. The analysis draws on new empirical techniques, including time-varying instrumental variable approaches, Bayesian structural break models, spatial panel methods, frequency-domain decompositions, and explainable machine learning. By systematically integrating these studies, the review clarifies the extent to which the pandemic represents a structural break, a period of atypical disturbances, or an acceleration of longer-term dynamics previously identified in the literature.

2 Insights from Pre-COVID Research: Fragility and Regime Dependence

Before the pandemic, a significant body of empirical work had already rejected the notion of a universal Phillips Curve. The studies by Y. Sovbetov and Kaplan (2019a, 2019b), together with panel evidence reported in Y. Sovbetov (2019), show that the relationship varies across countries, inflation regimes, and phases of the business cycle. These studies analyze forty-one economies over several decades and document that the Phillips Curve holds primarily in advanced economies under tranquil macroeconomic conditions. In emerging and frontier markets, persistent inflation volatility, weak institutional frameworks, and credibility issues undermine the stability of the relationship. A core insight from this earlier research is the asymmetry between tranquil and recessionary

phases. During tranquil periods, inflation responds more predictably to changes in economic slack, although the magnitude varies considerably across advanced, emerging, and frontier economies. During recessionary periods, both backward- and forward-looking components of inflation become more pronounced, yet the estimated slope of the Phillips Curve often loses significance or reverses sign. The findings indicate that inflation becomes increasingly sensitive to expectations when uncertainty rises, while the direct influence of unemployment or output gaps weakens. This dynamic helps explain the collapse of the Phillips relationship during downturns, including the Great Recession and earlier contractionary episodes. These pre-COVID findings are highly relevant for interpreting the post-2020 inflation environment. They provide a baseline expectation that large negative shocks are likely to distort conventional inflation–slack dynamics. They also highlight the role of inflation persistence and the importance of distinguishing between structural determinants of inflation and cyclical adjustments that reflect temporary shocks.

3 Reassessing the Phillips Curve in the Post-COVID Period

The COVID-19 pandemic introduced a combination of supply shocks, demand surges, sector-specific bottlenecks, labor-market mismatches, and large shifts in fiscal and monetary stimulus. As a result, inflation dynamics between 2020 and 2023 challenge the predictions of standard linear Phillips models. Scholars respond to these anomalies in different ways, leading to a set of interrelated debates about slope stability, nonlinearities, expectations, and the appropriate empirical frameworks.

3.1 Structural Slope Stability and Expectation Anchoring

Recent contributions place strong emphasis on the role of expectations in shaping Phillips Curve estimates. Jorgensen and Lansing (2025) demonstrate that the observed flattening of the reduced-form accelerationist Phillips Curve masks a stable underlying structural slope once expectation anchoring is modeled explicitly. Their analysis shows that reduced-form regressions can produce misleading inferences about the curve's slope because anchored expectations compress the variability of inflation relative to slack. When expectation anchoring improves, both the accelerationist and original Phillips Curve slopes appear flatter or steeper depending on the specification. Their structural NKPC estimates reveal a remarkably stable slope from the 1960s onward, suggesting that apparent flattening is a statistical rather than structural phenomenon. Similarly, Mendes et al. (2025) introduce trend inflation into a generalized NKPC framework and find that doing so weakens the backward-looking term while strengthening the forward-looking component and reducing the slope. Their results imply that the failure of Phillips relationships in recent decades partially reflects the omission of trend inflation from standard specifications. Evidence

from survey-based studies adds further nuance. Czudaj (2024) analyzes forecast data from the ECB Survey of Professional Forecasters and finds that experts form expectations consistent with the Phillips mechanism only at shorter horizons. At longer horizons, the connection between inflation and unemployment weakens as expectations become more firmly anchored around policy targets. Using household-level survey data, Kirpson and Staehr (2024) similarly show that individuals do not consistently form beliefs aligned with Phillips Curve logic, even after accounting for supply-side shocks. Taken together, these studies support the premise that the perceived failure of the Phillips Curve depends heavily on the properties of expectation formation. They also align with earlier evidence reported by Y. Sovbetov and Kaplan (2019b), who document that forward-looking components of inflation gain greater weight after the 1990s, coinciding with the adoption of monetary regimes that emphasize credibility and expectation anchoring.

3.2 Re-Steepening During and After the Pandemic

While much of the literature documents a long-run flattening of the Phillips Curve, several recent studies report evidence of re-steepening during the immediate post-pandemic period. Inoue et al. (2025) employ a flexible time-varying instrumental variable approach that is robust to weak instruments and show that the slope of the Phillips Curve increased noticeably during the pandemic. They attribute this re-steepening to supply constraints, sectoral bottlenecks, and temporary unanchoring of inflation expectations, all of which amplified inflation's sensitivity to economic conditions. Their findings suggest that the pandemic introduced a distinct regime in which conventional inflation determinants temporarily regained relevance. Using a country-specific approach, Mallick (2024) examines Australia and finds no evidence of re-steepening once identification properly accounts for cost-push shocks and equilibrium unemployment, although naively estimated models do indicate a steeper curve. This contrast underscores the importance of identification strategy when evaluating post-COVID re-steepening claims. Evidence from Smith et al. (2025) complements the time-varying IV results by revealing structural breaks and clusters of sectors or countries that display similar Phillips Curve patterns. Their analysis shows that while many U.S. sectors and EU economies continue to exhibit flattening, the Phillips Curve remains relatively steep for industries operating at high capacity utilization or during episodes when the economy is running hot. Taken together, these studies present a mixed but instructive picture. Some economies experience re-steepening driven by supply-side constraints and temporary expectation drift, whereas others continue to display flattening or only modest sensitivity of inflation to slack. These findings are consistent with the regime-dependent evidence reported by Y. Sovbetov (2019), which suggests that the Phillips mechanism is most likely to weaken or collapse during recessions and to re-emerge gradually as macroeconomic conditions normalize.

3.3 Capacity Constraints, Sectoral Dynamics, and Nonlinearities

Recent theoretical work deepens the understanding of why Phillips relationships appear nonlinear in practice. Holm et al. (2024) show that capacity constraints flatten the Phillips Curve in Calvo-pricing environments because firms that adjust prices avoid diverging too far from firms that do not. This result contradicts the intuitive view that diminishing returns necessarily steepen the Phillips slope. Their analysis provides conceptual clarity on how production-side constraints interact with nominal rigidities to shape inflation dynamics. Kocherlakota (2025) demonstrate that time-dependent pricing models imply global concavity of the short-run Phillips Curve under relatively mild conditions. This concavity explains why inflation responds weakly to slack in low-activity regimes while reacting more strongly when the economy overheats. Such nonlinear structure rationalizes the coexistence of muted inflation responses during downturns and rapid price increases during strong expansions. Machine learning approaches reinforce these theoretical insights. Pratap et al. (2025) apply explainable machine learning techniques to India and find that inflation responds most strongly to expectations and past inflation, whereas output-gap effects exhibit threshold behavior and nonlinear interactions. Their results suggest that much of the apparent failure of the Phillips Curve arises from linear model misspecification rather than genuine structural collapse. Sectoral and regional studies further reveal substantial spatial heterogeneity. Lasarte-Navamuel et al. (2025) show that Spain exhibits a flattened but persistent Phillips relationship, with strong regional price convergence influencing inflation dynamics. Similarly, Kishaba and Okuda (2025) find that in Japan the Phillips Curve slope for service prices has roughly halved since the early 2000s, reflecting the prolonged period of unconventional monetary policy and the constraints imposed by the zero lower bound.

3.4 Frequency-Specific Dynamics and Medium-Run Adjustments

Several studies examine inflation dynamics beyond the traditional time domain. Martins and Verona (2023) analyze the New Keynesian Phillips Curve in the frequency domain and find that inflation expectations dominate medium- and long-run cycles, while unemployment is statistically significant but economically negligible across frequency bands. These results help explain why conventional Phillips Curve estimates often appear weak or unstable, particularly when short- and long-run dynamics are conflated. Focusing on medium-run horizons, Fratianni et al. (2022) investigate the United Kingdom and document robust evidence of a wage Phillips Curve at frequencies corresponding to eight- to sixteen-year cycles. Their findings imply that Phillips relationships may hold reliably only at specific horizons, complicating interpretations based solely on short-run evidence. Frequency-domain evidence aligns closely with the hybrid NKPC estimates reported by I. Sovbetov (2025a), which show

that both backward- and forward-looking components remain relevant for post-Soviet Eurasian economies and that imported inflation plays a substantial role in shaping marginal cost slopes. Together, these results confirm earlier evidence that inflation persistence and external shocks are critical determinants of the observable Phillips Curve relationship.

4 Meta-Analytic Synthesis: Interpreting the Post-COVID Evidence

A synthesis of the reviewed studies reveals several common themes. First, the Phillips Curve is highly regime-dependent. During periods of macroeconomic tranquillity, inflation responds more predictably to domestic slack (I. Sovbetov, 2025b). During recessions or episodes of heightened uncertainty, this relationship weakens or collapses, consistent with regime-switching interpretations. Second, expectations play a central role in shaping observed inflation dynamics. When inflation expectations are well anchored, inflation becomes less sensitive to slack, leading to apparent flattening in reduced-form estimates. When expectations drift, even temporarily, inflation may react more strongly to shocks, producing episodes of re-steepening. Third, the structural slope of the Phillips Curve appears more stable than reduced-form evidence suggests. Studies that explicitly model expectation anchoring, trend inflation, and time variation generally recover more persistent slope parameters. Fourth, the pandemic has not fundamentally altered the long-run properties of the Phillips relationship. Instead, it has exposed the limitations of traditional identification strategies, highlighted the importance of nonlinearities, and underscored the relevance of hybrid structural models. Fifth, heterogeneity across sectors, regions, and countries is substantial. Labor market characteristics, global supply linkages, occupational shifts, job polarisation, and regional productivity differences all influence the slope and dynamics of inflation adjustments. For example, Siena and Zago (2024) show that job polarisation and labor market fluidity significantly contribute to Phillips Curve flattening in the euro area. These structural forces amplify long-run flattening and complicate attempts to estimate a single, economy-wide slope parameter. Finally, recent contributions emphasize growing methodological sophistication. Time-varying instrumental-variable approaches address weak-instrument problems that previously obscured slope estimates. Bayesian structural break models reveal clusters of industries or countries with similar dynamics. Spatial econometric methods capture cross-regional dependencies. Machine learning techniques uncover nonlinearities and threshold effects, while frequency-domain approaches show that inflation responses differ across cycle lengths. Taken together, these developments indicate that the Phillips Curve is neither obsolete nor universally valid. Instead, it remains a contingent empirical relationship shaped by structural features, expectation dynamics, and modeling choices. The pandemic has amplified these complexities but has not fundamentally altered the core mechanisms identified

in earlier work.

5 Conclusion

This meta-analysis revisits the perceived failure of the Phillips Curve in light of the COVID-19 pandemic and the subsequent surge in global inflation. The synthesized evidence indicates that the Phillips relationship is highly sensitive to macroeconomic regimes, the degree of expectation anchoring, structural labor-market conditions, and supply-side disturbances. Pre-pandemic research had already emphasized the fragility of the Phillips mechanism, particularly during recessionary episodes. Post-COVID contributions reinforce this interpretation by showing that apparent failures largely reflect nonlinearities, structural breaks, and shifts in expectations rather than the disappearance of the underlying structural relationship between inflation and real activity. While some studies document a temporary re-steepening of the Phillips Curve during the pandemic, others confirm the persistence of long-run flattening. These seemingly contradictory findings become coherent when interpreted through a regime-dependent framework in which inflation responds differently to economic slack depending on the state of the business cycle, the credibility of monetary policy, and sectoral or regional conditions. Evidence from hybrid NKPC models, time-varying instrumental-variable approaches, and frequency-domain analyses consistently suggests that the structural slope of the Phillips Curve is more stable than reduced-form estimates imply. Overall, the post-COVID inflation episode has not invalidated the Phillips Curve. Instead, it has reaffirmed the importance of structural modeling, expectation dynamics, and cross-country heterogeneity in understanding inflation behavior. Future research should focus on integrating behavioral expectation formation, supply-chain disruptions, global cost shocks, and nonlinear adjustment mechanisms into unified analytical frameworks. Such approaches are likely to provide more accurate and policy-relevant insights into inflation dynamics in the post-pandemic global economy.

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