Literature Review on New Keynesian Phillips Curve (NKPC)

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Abstract

This paper revisits the theoretical and empirical evolution of the Phillips Curve through the lens of modern New Keynesian macroeconomics. While the traditional unemployment–inflation relationship has long been viewed as unstable, recent advances attribute its variability to the interaction of expectations, nominal rigidities, and structural features such as openness and imported marginal costs. The review synthesizes key developments in the New Keynesian Phillips Curve, including forward-looking price setting, hybrid indexation, sticky-information dynamics, and small open-economy extensions. Empirical evidence across advanced, emerging, and transition economies reveals substantial heterogeneity in slope, persistence, and the relative weight of backward- and forward-looking components, particularly across tranquil and recessionary periods. The findings highlight that the Phillips Curve is conditional rather than structural, with inflation dynamics fundamentally shaped by the credibility of monetary policy, the structure of expectations, and the sensitivity of marginal costs to domestic and external shocks.

Keywords: Phillips Curve; Unemployment; Inflation Dynamics

JEL Classification: E31, E44, E52

1 Literature Review on New Keynesian Phillips Curve

The modern study of inflation dynamics builds on a long intellectual trajectory that begins with the traditional Phillips Curve and culminates in the New Keynesian synthesis. Although the original empirical finding suggests a stable inverse relationship between unemployment and wage inflation, later research consistently shows that this correlation is far from invariant. Its slope, persistence, and empirical relevance vary across time, across countries, and across macroeconomic regimes. Much of contemporary scholarship therefore shifts toward structural explanations rooted in price rigidity, expectations formation, and the composition of marginal costs.

A foundational advance emerges with the expectations-augmented formulation, where agents incorporate expected inflation into wage and price decisions. This shift opens the door to rational expectations and forward-looking behavior, but persistent empirical anomalies motivate deeper theoretical refinement. Roberts (1995) formalizes one of the earliest rational-expectations Phillips Curve frameworks, proposing that firms set prices based on optimal forward-looking behavior subject to nominal rigidities. In Roberts' formulation, inflation depends on expected future inflation and deviations of output from potential, providing the essential structure later used in the New Keynesian Phillips Curve (NKPC).

Galí and Gertler (1999) introduce the first comprehensive structural estimation of the NKPC, linking inflation directly to real marginal costs rather than to the output gap. In their model, marginal costs reflect the cyclical component of the labor share more accurately than traditional output-gap measures. Their empirical evidence suggests a prominent forward-looking component, with firms setting prices partly based on expectations of future inflation. Subsequent applications reinforce the idea that marginal cost, rather than unemployment, captures meaningful variation in inflation. Some studies show that marginal cost behaves as a superior measure of cyclical pressure compared to the output gap (Gali et al., 2001).

However, purely forward-looking NKPC specifications face challenges in matching inflation persistence. Inflation often adjusts sluggishly even when marginal costs shift, suggesting that additional frictions shape the behavior of firms. Gali et al. (2005) respond to these empirical shortcomings by proposing the hybrid NKPC, which incorporates both forward-looking expectations and backward-looking indexation. Their results indicate that a reasonable share of firms rely on rule-of-thumb behavior, generating persistence in inflation rates. Empirical work in both advanced and emerging economies frequently supports this hybrid structure, with inertia playing a sizable role where expectations are not fully anchored.

One of the most influential departures from the Calvo-style price rigidity appears in Mankiw and Reis (2002). Their sticky-information model argues that firms update information infrequently rather than prices. As a consequence, inflation depends on outdated expectations and evolves more gradually than under Calvo pricing. This framework produces smoother inflation paths and a flatter Phillips relationship, especially when shocks arrive while information updating remains incomplete. Sticky-information dynamics often match observed inflation persistence better than purely forward-looking NKPC structures, a point emphasized in later empirical comparisons. Some studies conclude that inflation inertia may reflect slow diffusion of information rather than mechanical indexation (Mankiw and Reis, 2002).

Despite these advances, the empirical performance of the NKPC varies substantially across countries. Research on emerging markets repeatedly documents weaker forward-looking behavior and much stronger backward-looking components. Economies with histories of volatile inflation tend to exhibit high persistence that hybrid models must capture. Evidence from multi-decade cross-country analyses finds that countries with more stable inflation regimes typically display stronger forward-looking behavior, while countries exposed to recurrent inflationary shocks exhibit persistent backward-looking dynamics. These findings are consistent with studies reporting that forward-looking inflation gains weight in more tranquil macroeconomic environments (Sovbetov and Kaplan, 2019a). Other research shows that the stability of the Phillips Curve itself is regime-dependent, functioning well during tranquil periods but collapsing during recessionary phases when uncertainty and rigidities intensify (Sovbetov, 2019).

The hybrid NKPC gains further support in transition economies, where institutional structures evolve and exchange-rate volatility affects domestic prices. Basarac et al. (2011) document hybrid Phillips relationships in several transition economies, arguing that inflation in these settings cannot be fully described by a purely forward-looking structure. More recent work continues this line of inquiry using continuously updating GMM estimators. Sovbetov (2025a) shows that in post-Soviet Central Asia and the South Caucasus, inflation combines substantial backward-looking inertia with meaningful forward-looking components.

His estimates reveal that the weight assigned to forward-looking expectations increases in countries with stronger monetary credibility, while backward inertia dominates in countries with weaker frameworks. These findings reinforce the importance of expectations anchoring in shaping the slope and persistence of the Phillips relationship across heterogeneous economies.

A major stream of literature focuses on open-economy extensions of the NKPC, where external shocks, imported intermediate goods, and exchange-rate fluctuations exert significant influence. Galí and Monacelli (2005) construct a small open-economy NKPC in which domestic firms face foreign competition and external factors directly affect marginal costs. Their model predicts that inflation reacts to both domestic slack and international shocks depending on pass-through levels. Monacelli (2005) further analyzes how low pass-through conditions alter the impact of monetary policy, showing that inflation dynamics differ sharply when exchange-rate fluctuations do not fully translate into domestic prices. Empirical applications confirm that imported marginal costs play a central role in many small open economies, particularly those heavily reliant on imported inputs.

Additional empirical support comes from Batini et al. (2005), who estimate an open-economy NKPC for the United Kingdom and find substantial influence of external cost pressures. Their results suggest that imported inflation contributes materially to domestic price dynamics, especially under high pass-through regimes. These findings mirror observations in emerging and transition economies where exchange-rate volatility represents a key determinant of inflation persistence and slope. In several settings, imported cost pressures explain a considerable share of total marginal cost variation, thereby moderating the direct link between unemployment and inflation.

The flattening of the Phillips Curve constitutes one of the most prominent empirical puzzles in recent decades. Many studies document a decline in the responsiveness of inflation to domestic economic conditions since the 1990s. Blanchard and Gali (2010) argue that labor market reforms, globalization, and increased monetary policy credibility contribute to a weaker slope. As expectations become more firmly anchored, temporary fluctuations in unemployment generate only modest variations in inflation. Other research supports the hypothesis that global competition and global slack reduce the pricing power of domestic firms. Under this view, firms adjust prices not solely based on local demand conditions but also in response to competitive pressures from abroad. This mechanism implies that domestic unemployment loses explanatory power when global integration intensifies.

Inflation persistence remains central to understanding the evolution of the Phillips Curve. Rudd and Whelan (2005) question the empirical relevance of purely forward-looking NKPC models, suggesting that they cannot adequately capture inertia without imposing large and arguably unrealistic degrees of indexation. Hybrid formulations address this concern by assigning weight to past inflation. Empirical estimates generally show that backward-looking components play a larger role in economies where inflation expectations are poorly anchored or where institutional credibility has historically been weak. This heterogeneity aligns with evidence that inflation dynamics differ significantly across economic environments, as documented in multi-country analyses where the Phillips Curve behaves differently across market classifications and historical episodes (Sovbetov and Kaplan, 2019b).

State dependence also emerges as a significant feature. Several studies suggest that the Phillips relationship behaves differently during expansions and recessions. Evidence from recession-focused analyses shows that the curve tends to collapse during downturns, with inflation becoming less sensitive to real activity when uncertainty surges and wage rigidities intensify (Sovbetov, 2019). This pattern aligns with research on downward nominal wage rigidity, which implies that firms avoid reducing prices during severe contractions. Consequently, inflation becomes less responsive to the economic cycle, generating episodes of missing disinflation. These dynamics intensify when firms face fixed costs of price adjustment or when deflationary price cuts risk signaling financial weakness.

Complementary research explores the role of firm-level microfoundations, including menu costs, information frictions, and strategic complementarities. Several NKPC studies suggest that small costs of changing prices can generate substantial nominal rigidity in equilibrium, thereby amplifying the persistence of inflation. Under these conditions, even moderate cost shocks produce only gradual price adjustments. The presence of customer relationships and implicit contracts may further delay price responses, especially in sectors with repeated buyer–seller interactions. Sticky-information models strengthen these implications by showing that firms often react to economic conditions with a lag due to incomplete or outdated information processing (Mankiw and Reis, 2002).

Taken together, the literature demonstrates that the Phillips Curve is best understood as a conditional relationship shaped by expectations, frictions, and structural characteristics. The NKPC provides a coherent theoretical foundation, but hybrid, sticky-information, and open-economy variations frequently outperform the basic forward-looking specification. Cross-country evidence shows that inflation dynamics respond not only to domestic slack but also to imported cost pressures, institutional credibility, and macroeconomic stability (Sovbetov, 2025b). Empirical analyses spanning diverse economic environments confirm that inflation persistence and the relative weight of forward- and backward-looking components evolve over time. As a result, the contemporary Phillips Curve cannot be interpreted as a universal structural law. Instead, it is a fluid and complex mapping from real activity to prices, shaped by expectations regimes, openness, and the institutional environment.

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