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Evolving dynamics of the relationship between US core inflation and unemployment[☆]

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ABSTRACT

Labor market dynamics in the US are changing due to long-term factors including decelerating labor force growth, rising age of the labor force, and the rapid advance of e-commerce, as well as the one-time downward adjustment during 2009–2013 of the size of state and local government work forces. We discuss some of the controversies revolving around how to analyze labor markets in this dynamic environment from the perspective of monetary policymaking, given the dual mandate of the Federal Reserve to encourage both full employment and price stability. Our statistical research documents the changing association between US unemployment and core inflation. There was a perceived trade-off between inflation and unemployment in the 1950s and 1960s that gave way to stagflation in the 1970s, when both unemployment and inflation were rising. The 1980s were a transition period where the trade-off was perceived to have returned. This trade-off has not been so clear, however, when one looks at the last twenty years. Since 1995, a period of stable and low inflation was consistently observed despite considerable cycles in the unemployment rate.

Our theoretical discussion provides a dynamic interpretation of the shifting nature of labor markets, with the objective of pointing the way for future research while highlighting crucial differences in possible interpretations that could fuel debate, both inside and outside the Fed, over how the Fed should manage its dual mandate. The dynamic changes being seen in US labor markets all suggest that the effectiveness of monetary policy to encourage full employment may be vastly overstated. If this interpretation is correct, the Fed may need to reconsider how to manage its dual mandate and react less aggressively to perceived labor slack that may be due to longer-term structural shifts over which the Fed has no influence.

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1. Introduction

In this research, we discuss some of the controversies revolving around how to analyze labor markets from the perspective of monetary policymaking. Our central theme is that the interaction between labor market conditions and inflation is inherently dynamic. In the words of the venerable Joan Robinson (1972), “There is no such thing as a normal period of history. Normality is a fiction of economic textbooks.” Accordingly, any interpretation of labor market data built on assumed reversion to some “average” or “normal” economic state is likely to be wrong. This observation is particularly relevant for Federal Reserve (Fed) decision making, given the dual mandate to encourage both full employment and price stability. Indeed, there has been a healthy debate

within the economics profession concerning the nature of how these two mandates complement or collide with each other.

Our statistical research simply documents the changing association between US unemployment and core inflation. There was a perceived trade-off between inflation and unemployment in the 1950s and 1960s that gave way to stagflation in the 1970s, when both unemployment and inflation were rising. The 1980s were a transition period where the trade-off was perceived to have returned. This trade-off has not been so clear, however, when one looks at the last twenty years. Since 1995, a period of stable and low inflation was consistently observed despite considerable cycles in the unemployment rate.

With this statistical background, we turn to theoretical issues and practical challenges to provide a dynamic interpretation of the shifting nature of the inflation and unemployment relationship. Our objective is to point the way for future research while highlighting crucial differences in possible interpretations that could fuel debate, both inside and outside the Fed, over how the Fed should manage its dual mandate. We contrast a hypothetical “standard view,” premised on a post-recession return to normality, against a “dynamic view,” which highlights the challenges of interpreting labor market data in light of the aging of the work force, secular deceleration of labor force growth, and the impacts

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of technological innovation upon business structure and hiring practices in the retail and service sectors, among other forces that are in play.

The research is organized to start with a focused review of the labor market literature concerning the inflation and unemployment trade-off. Then, we present some basic statistical evidence suggesting just how dynamic and inconsistent the inflation and unemployment association actually has been since the Fed received its dual mandate in the late 1940s. We then shift to a theoretical discussion of the key forces within the US labor market that may be driving the dynamics of the inflation–unemployment relationship. And, finally, our concluding section summarizes our finding and points the way for future research. Specifically, the dynamic changes being seen in US labor markets due to long-term factors such as decelerating labor force growth, rising age of the labor force, and the rapid advance of e-commerce, as well as the one-time downward adjustment during 2009–2013 of the size of state and local government work forces, all suggest that the effectiveness of monetary policy to encourage full employment may be vastly overstated. If this interpretation is correct, the Fed may need to reconsider how to manage its dual mandate and react less aggressively to perceived labor slack that may be due to longer-term structural shifts over which the Fed has no influence.

2. Research challenges concerning US inflation and unemployment

What became the traditional perspective concerning the perceived trade-off between unemployment and inflation worked through the differential interaction of money wages and real wages and was energized by the research of Phillips (1958) and what became known as the Phillips Curve. Considerable research followed through the 1960s, summarized in Brechling (1968). Then came the inflationary 1970s accompanied with rising unemployment rates, especially notable in the US. The decade of stagflation changed the debate, making the issues vastly more complex, yet more important than ever to understand from a monetary policy perspective.

The research in the late 1970s and 1980s started to come to grips with how to explain the existence of involuntary unemployment in an equilibrium model in which all markets were assumed to clear. Mixed into this debate on labor market efficiency were attempts to model the natural rate of unemployment, as in Salop (1979), by examining different labor market frictions as well as behavioral issues related to differential reactions to changes in nominal and real wages. As Yellen (1984) observed: “Involuntarily unemployed people, by definition, want to work at less than the going wage rate. Why don’t firms cut wages, thereby increasing profits?” Neither Walrasian models, such as Calvo (1979), nor monetarist approaches, such as Brunner, Cukierman, and Meltzer (1980) really got to the heart of the question posed by Yellen.

Yellen (1984), along with Akerlof and Yellen (1986), and Akerlof, Rose, Yellen, Ball, and Hall (1988) were focused on what were called efficiency wage models of the labor market. This approach analyzed possible reasons why profit-maximizing firms might choose to pay higher wages than the market might suggest or in recessions might choose not to lower wages. For example, firms might pay higher wages than the going rate to discourage shirking and improve productivity, also analyzed in Calvo (1979). Then there is the labor turnover factor, which argues, as in Salop (1979), that workers will be less likely to quit if they are earning an above-market wage. The concept here is that turnover is very costly to firms in many ways and lowering turnover increases long-term labor productivity. Adverse selection models, such as Weiss (1980), argued that firms might view workers that were willing to work for less as having a cap on their abilities. Or put another way, paying higher wages increases the likelihood of employing more capable workers, increasing long-term labor productivity for the firm. Finally, a new line of research focused on behavioral aspects of worker decisions that are not necessarily profit-maximizing at the individual level, as assumed by the classical models. This research avenue was pioneered by Solow (1980) and Akerlof (1982).

What these various approaches to labor market analysis emphasized was that the modeling was exceptionally complex. Choices by firms looking to enhance long-term results suggest they might not always be willing to react to short-term events and changes in the labor market in the manner that classical equilibrium models might suggest. Moreover, individuals might be governed in part by sociological and behavioral choices that challenged the notion of how rational individual agents are assumed to act in classical models. Yet, from a policy perspective, the debate came back to trying to understand the output–inflation trade-off, as in Ball, Mankiw, and Romer (1988). The policy debate was energized by the research of Taylor (1993a, 1993b, 1994) in what became known as the Taylor Rule for how the Fed might decide short-term interest rate policy and meet its dual mandate with a trade-off between inflation and labor markets.

While this policy trade-off debate has continued unabated, the world changed again, with a long period of low inflation in many mature economies, including the US, which started in the mid-1990s. From 1995 through 2014, core inflation, the measure preferred by the Fed which excludes the more volatile food and energy components, was essentially bounded in the 1% to 2% range. During this two decade long period, the US stock market experienced a tech boom and bust, then came the housing boom and a spectacular bust with the financial panic of 2008, and a deep recession and modest economic expansion afterwards. Unemployment cycled from low levels to high levels, yet core inflation hardly moved. Some research was still focused on the past trade-off issues, such as Cogley and Sbordone (2008), for example, which looked at the persistence of inflation and a Keynesian interpretation of the Phillips curve. Other researchers, however, shifted gears with the new low inflation environment in which unemployment and inflation appeared disconnected. Hoogenveen and Kuipers (2012) examined the long-run effects of low inflation rates in several countries. They attempted to salvage the traditional trade-off approach, arguing at low inflation and near-zero short-term interest rates that the Phillips Curve is non-linear. Ormerod, Rosewell, and Phelps (2013) were more direct and analyzed the apparent instability of the Phillips curve. Putnam and Azzarello (2012) have looked at the Taylor Rule through the lens of a dynamic Bayesian statistical approach, finding that the evolution of the dual mandate trade-off suggested that changing labor market dynamics are playing a role in how the Fed decision making process has shifted over time.

Our perspective is that one of the next paths in the evolution of research on the association of inflation with labor markets will be to appreciate how certain secular trends may be altering labor market conditions. In the US, labor force growth has slowed precipitously from its peak in the mid-1970s. The labor force has also aged significantly through time. And, the information age has brought new challenges to corporations, including a major shift to e-commerce as well as how technological innovations have changed the nature of many jobs. Also, during the 2009–2013 period there was a one-time major downward adjustment of the size of government workforces, especially at the state and local levels. All of these factors suggest we have entered a new phase of labor market dynamics, with new questions to examine. Our approach is to start with some very basic statistical evidence just to highlight and underscore the dynamic nature of the association of inflation with unemployment with which the Fed must contend. Then, we will turn to a theoretical discussion of how key new secular trends may be influencing how labor market conditions need to be interpreted.

3. Appreciating the changing nature of the statistical relationship between US core inflation and unemployment

As noted earlier, since 1995, the core inflation rate, excluding food and energy, has remained quite steady, bounded by a 1% to 2% range. Essentially, the US economy has experienced two decades of low and stable inflation. What is notable about this 20-year period is that it encompassed the tech wreck in the stock market in the late 1990s, the housing boom of 2003–2007, and the financial disaster of 2008.

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