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ABSTRACT

Costly nominal wage adjustment has received renewed attention in the design of optimal policy. In this paper, we embed costly nominal wage adjustment into the modern theory of frictional labor markets to study optimal fiscal and monetary policy. The main result is that the optimal rate of price inflation is quite volatile despite the presence of nominal wage rigidities. This finding contrasts with results obtained in standard sticky-wage models, which employ neoclassical labor markets at their core. In addition, the tax-smoothing result that lies at the heart of optimal policy prescriptions in standard Ramsey models does not carry over to a search and bargaining environment. Both results stem from a common source in our model. Shared rents associated with the formation of long-term employment relationships imply that the optimal policy entails fluctuations in after-tax real wages much larger than in models with neoclassical labor markets, in which no such rent-sharing margin exists. The results demonstrate that the level at which nominal wage rigidity is modeled—whether simply layered on top of a neoclassical market or articulated in the context of an explicit relationship between workers and firms—can matter a great deal for policy recommendations.

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1. Introduction

The study of optimal monetary policy in the presence of nominally rigid wages has enjoyed a resurgence of late. The typical story behind models featuring nominal wage rigidities is that wage negotiations are costly or time-consuming, which leads to infrequent adjustments. However, it is somewhat difficult to understand the idea of wage negotiations, costly or not, when the underlying model of the labor market is neoclassical, which is true of existing sticky-wage models that study optimal policy. In neoclassical markets, there are no negotiations—all transactions are simply against the anonymous market. Instead, models that feature explicit bilateral relationships between firms and workers seem to be called for in order to study the consequences of costly wage negotiations.

In this paper, we embed costly nominal wage adjustment into the modern theory of frictional labor markets, which formalizes the notion of long-term employment relationships, to study optimal fiscal and monetary policy. The main result is that the optimal inflation rate is quite volatile over time despite the presence of nominal wage rigidities. This result

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contrasts with those obtained in environments with fundamentally neoclassical labor markets. In addition, the typical tax-smoothing incentive at the heart of optimal policy prescriptions in standard Ramsey models does not carry over into our environment: the optimal labor tax rate is an order of magnitude more volatile than in a standard Ramsey model. A central message of our results is thus that the level at which nominal wage rigidity is modeled—whether simply layered on top of a neoclassical market or articulated in the context of an explicit relationship between workers and firms—can matter a great deal for policy recommendations.

Since Chari et al. (1991), the cyclical properties of optimal policy in basic Ramsey monetary models have been well understood. One of their main quantitative findings was that, in an environment with fully flexible nominal prices and nominal wages, a Ramsey planner engineers large state-contingent movements in the price level in response to business-cycle magnitude shocks affecting the consolidated government budget. The Ramsey literature has recently re-examined this issue in models featuring nominally sluggish prices and wages. Schmitt-Grohe and Uribe (2004a) and Siu (2004) showed that with even a small degree of nominal rigidity in prices, optimal inflation volatility is quite small. Chugh (2006) showed that stickiness in nominal wages by itself also makes Ramsey-optimal inflation very stable over time, but in the latter the wage rigidity is introduced in an otherwise neoclassical labor market.

The contrast between the results here and those in Chugh (2006) stems from the importance the planner attaches to delivering a stable path of aggregate real wages for the economy. The key to understanding the result in a neoclassical model is that if real wage growth is determined essentially by technological features of the economy (such as productivity) that do not fluctuate too much, then any desire to stabilize nominal wages shows up as a concern for stabilizing nominal prices. If real wages are not tied so tightly to an economy's production possibilities but instead are free to adjust without much allocative consequence, as can be the case in an environment with search frictions, then such an effect need not occur. In our model, wages are determined after a worker and a firm endure a costly search process. Once two parties meet, the resulting economic rents are divided through wage negotiations. In general, there is a continuum of real wages that is acceptable for both parties to agree to consummate the match and begin production. In this sense, the aggregate real wage plays much more of a distributive, rather than a purely allocative, role. Thus, any desire to stabilize nominal wages does not immediately translate into a desire to stabilize nominal prices.

A similar mechanism underpins the lack of tax-smoothing that is part of the model's optimal policy prescription. Werning (2007) and Scott (2007) recently shed new insight on the quantitative finding by Chari et al. (1991) (henceforth, CCK) that labor tax rates should remain virtually constant over time in the face of business-cycle shocks. However, this result and intuition rely on neoclassical labor markets. Because a simple neoclassical relationship between employment and labor taxes does not exist in a search model, there ought to be no presumption that labor-tax-smoothing *should* arise in an environment with fundamental frictions. Indeed, the rent-sharing that makes inflation stability an unimportant goal of policy is also the driving force behind the unimportance of tax-smoothing. Cyclical (and large) variations in both inflation and tax rates affect the distributional consequences of the real wage through what we refer to as a *dynamic bargaining power effect*, but these redistributions have little impact on real allocations.

The primary focus of this study is on the short-run dynamics of optimal policy, but the model also has predictions for long-run policy. The most notable is that in the long run, the optimal inflation rate trades off three distortions. Two distortions are standard in monetary models: inefficient money holdings due to a deviation from the Friedman Rule versus resource losses stemming from nominal adjustment due to non-zero inflation. The third distortion influencing steady-state inflation is inefficiencies in job creation, which *positive* inflation in some cases can offset. This latter policy channel is one about which Ramsey models based on neoclassical labor markets are silent; it is one that others using labor-search frameworks, such as Faia (2008) and Cooley and Quadrini (2004), have also pointed out, albeit not in the context of a model studying both fiscal and monetary policy.

Our work is more broadly related to the recent literature exploring the consequence of nominal rigidities in labor search and matching environments.¹ The studies most closely related to ours are Faia (2008) and Thomas (2008), both of whom study optimal monetary policy in New Keynesian models with labor matching frictions. In contrast, our model features flexible product prices. Furthermore, rather than concentrating solely on monetary policy, we conduct a traditional Ramsey exercise in which we solve an optimal public financing problem that requires specifying fiscal and monetary policy jointly. Despite obvious differences in implementation, the views emerging from this study and those of Faia (2008) and Thomas (2008) are complementary.

The rest of the paper is organized as follows. Section 2 builds the basic model. Section 3 presents the Ramsey problem, and Section 4 presents and discusses the main results. Section 5 summarizes and offers possible avenues for continued research. In the expanded working paper version, Arseneau and Chugh (2007), we also allow for an intensive margin of labor adjustment to demonstrate how a more standard neoclassical hours mechanism affects the results—the impression left by the results in the expanded model is largely the same as those reported here.

¹ For example, Blanchard and Gali (2006, 2007), Walsh (2005), Trigari (2006), Christoffel and Linzert (2005) and Krause and Lubik (2007), to name just a few.

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