Exploring the interaction between efficiency wages and labor market frictions

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Abstract

This paper explores the combined effects of efficiency wages and labor market matching frictions. A combined efficiency wage-frictional model is developed in which separate efficiency wage, frictional, and undistorted models are nested. It is found that the inclusion of efficiency wages puts upward pressure on wages and raises unemployment, while the friction puts downward pressure on wages and raises unemployment. Thus, it appears that unemployment generated by the frictional model cannot completely fulfill the role of unemployment as a discipline device, and vice versa. Other results show that the combined model has significantly different characteristics than its components. © 2000 Bureau of Economic and Business Research, University of Illinois. All rights reserved.

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1. Introduction

In recent years, there has been intense interest in explaining the natural rate of unemployment. Two empirically supported models used to explain this phenomenon are efficiency wages and frictional matching.[1] Because efficiency wages affect the productivity of workers and frictional matching affects the cost of labor, it is a natural exercise to explore the interaction between the two models. This paper builds a model in which the individual efficiency wage and frictional elements can be isolated, yet analysis reveals that the combined model exhibits characteristics that are fundamentally different from either model. For

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example a numerical simulation exhibits a situation in which unemployment and wages in the combined model exhibit more variability than either of the component models.

It is also found that the efficiency wage and frictional distortions each increase the unemployment rate when introduced into a labor market in which the other distortion is present. This implies that the unemployment generated by the matching friction can never completely fulfill the role of unemployment as a discipline device for efficiency wages. Similarly, unemployment generated by efficiency wages can never provide enough frictional unemployment to eliminate firms' search costs. This apparently counterintuitive result is explained through examining the interaction between the models. Not surprisingly, unemployment in the combined model is not necessarily the sum of the unemployment that would be generated under efficiency wage and frictional models alone. The paper provides examples for which the combined unemployment is higher or lower than the sum of the individual models. Finally, this paper suggests some implications of these results for theoretical and empirical research.

1.1. Efficiency wages and matching models

Although there are various types of efficiency wage models, this paper concerns itself with the efficiency wage incentive scheme used to overcome monitoring problems.[2] In this context, formalized by Shapiro and Stiglitz (1984), firms which can only sporadically monitor employees pay a wage above the market clearing rate. The high wages, in combination with resulting unemployment, provide a sufficient incentive to eliminate shirking. A key result of this literature is that involuntary unemployment is necessary to discipline workers — unemployment results in queues for jobs, placing a cost on any workers fired for shirking. Because this involuntary unemployment exists without the Keynesian assumption of sticky wages, efficiency wages have been used in many macroeconomic models.[3] While these models have relied exclusively on efficiency wages to generate unemployment, the combined model below shows that efficiency wages raises the unemployment rate even when frictional unemployment is present.

The many different types of frictional models have a longer history in the literature explaining unemployment.[4] In general, a friction is any factor that prevents job-seeking workers from finding a desired job when such a job is available, or employee-seeking firms from finding desired employees when such employees are available. The cause of a friction is usually either (a) an information imperfection or geographical barrier that imposes costs on unemployed workers who are searching for firms with vacancies (or vice versa), or (b) asymmetric information problems that make it difficult for heterogeneous workers to find an optimal job, when jobs are also heterogeneous. The former type of model has been used to model unemployment, vacancies and the relationship between the two (called the "Beveridge Curve"). The latter type of model has been used to model unemployment in the context of optimal search behavior.[5] In either case, a "friction" caused by asymmetric information prevents the labor market from clearing. These frictions essentially create adjustment costs.[6]

The matching model below, based on the Romer (1996) formulation, follows the adjustment cost literature by assuming that it is costly for firms to recruit new employees. Since recruiting costs become prohibitively high without a significant pool of unemployed workers,