Essays on Labor Market and Volatility Changes

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THESIS

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Abstract

This thesis investigates both the time-varing volatility in the labour market after World War II in the United States and the effect of volatility changes of labour productivity on the movements in labour market in a framework of frictional labour search model.

The first chapter documents the volatility changes in the U.S. labour market from 1951Q1 to 2007Q1. The time-varying volatility of unemployment, vacancy, job finding rate, job separation rate, and other key variables are presented in a series of stochastic volatility models estimated following a Bayesian approach. It is shown that the volatility of the U.S. labour market experienced a notable moderation after the mid-1980s. The estimated stochastic volatility of labour productivity is used as the driving process when studying an extended version of the model in Chapter 2.

Following the findings in Chapter 1, the effect of volatility shocks in labour productivity in the U.S. labour market is investigated in two benchmark models in the second chapter. We first consider a standard labour search model following the calibration approach introduced in Hagedorn and Manovskii (2008). After that, a risk-sharing labour search model with full-commitment contracts following Rudanko (2009) is also introduced for the analysis. It is found that, in both settings, a mean-preserving volatility shock in labour productivity has no effect on the optimal decision made by agents. A volatility change can only introduce a non neutral effect with the fact that it changes the range of the corresponding levels of productivity that the specific volatility has induced. Furthermore, while both of the two models are able to capture the volatility moderation reasonably well, the simulation of both models still suffers from a small magnitude of volatility in unemployment and other variables.

In the third chapter, the discussion on the effect of volatility changes is furthered with a more analytical perspective. In this chapter, we investigate the effect

of uncertainty shocks on job creation in a simplified one-period economy. In particular, two different scenarios are considered in this chapter: a situation where firms hire multiple workers with a production technology that exhibits decreasing return to scales, and another situation where risk-averse workers and risk-neutral firms signing risk-sharing contracts, a setting similar to Rudanko (2009). It is shown that if the firm's profit function is non-linear in labour productivity, then changes in expected volatility affects the expected value of a filled job vacancy and thus causes firms to create more job vacancies. Models that simply add concavity in the production function via diminishing returns to labour inputs do not work as the profit function is still linear in labour productivity. Instead, a model with sticky wages such as that of Michaillat (2012) is sufficient to introduce non neutral effect of volatility changes.

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