



A three state model of worker flows in general equilibrium [☆]

Per Krusell ^{a,b,c,d}, Toshihiko Mukoyama ^{e,f}, Richard Rogerson ^{g,d,*},
Ayşegül Şahin ^h

^a IIES, Sweden

^b CAERP, Spain

^c CEPR, United Kingdom

^d NBER, United States

^e University of Virginia, United States

^f CIREQ, Canada

^g Arizona State University, United States

^h Federal Reserve Bank of New York, United States

Received 12 August 2009; final version received 26 August 2010; accepted 30 September 2010

Available online 13 October 2010

Abstract

We develop a simple model featuring search frictions and a nondegenerate labor supply decision along the extensive margin. The model is a standard version of the neoclassical growth model with indivisible

[☆] Much of the material in this paper was previously contained in our paper entitled “Labor Supply in a Frictional Labor Market”. We thank Ramon Marimon (editor), Nicola Pavoni, Naoki Shintoyo and four anonymous referees for useful comments, as well as seminar participants at CEMFI, Columbia, Universitat Autònoma de Barcelona, USC, UCLA, the Atlanta Fed, Yale, UC Riverside, Queen’s, Georgetown, Wharton, Toronto, Ryerson, Western Ontario, Stockholm School of Economics, IIES, University of Oslo, Concordia, Northern Illinois, Yonsei University, Korea University, Ohio State, Notre Dame, Penn State, Indiana, Maryland, George Washington, as well as conference participants at the Labor Markets Conference at the IFS (2008), the Winter Institute of Macroeconomics 2009 (Tokyo), the Bewley Conference at UT Austin, and the 2009 SED Conference. We thank Joe Song for excellent research assistance. Krusell thanks the NSF for financial support, Mukoyama thanks the Bankard Fund for Political Economy for financial support, and Rogerson thanks the NSF and the Korean Science Foundation (WCU-R33-10005) for financial support. The views expressed in this article are those of the authors and do not necessarily reflect those of the Federal Reserve Bank of New York or the Federal Reserve System.

* Corresponding author at: Department of Economics, Arizona State University, Tempe, AZ 85287, United States. Fax: +1 480 965 0748.

E-mail addresses: Per.Krusell@iies.su.se (P. Krusell), tm5hs@virginia.edu (T. Mukoyama), Richard.Rogerson@asu.edu (R. Rogerson), Aysegul.Sahin@ny.frb.org (A. Şahin).

labor and idiosyncratic productivity shocks and frictions characterized by employment loss and employment opportunity arrival shocks. We argue that it is able to account for the key features of observed labor market flows for reasonable parameter values. Persistent idiosyncratic productivity shocks play a key role in allowing the model to match the persistence of the employment and out of the labor force states found in individual labor market histories.

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JEL classification: E24; J22; J64

Keywords: Labor supply; Labor market frictions

1. Introduction

Analyses of aggregate employment are dominated by two frameworks. One is the frictionless version of the standard growth model with an endogenous labor leisure choice, as in Kydland and Prescott [31], but modified as in Hansen [24] to include the indivisible labor formulation of Rogerson [48]. The other is the class of matching models à la Diamond–Mortensen–Pissarides, as described in Pissarides [44]. Loosely speaking, the former can be viewed as a model of labor force participation, while the latter can be viewed as a model of unemployment conditional on a participation rate. Cross country data reveal that there are significant differences across countries along all three margins: employment, unemployment and nonparticipation. Moreover, it seems reasonable to think that participation rates, employment rates and unemployment rates are all jointly determined, in the sense that any policy that affects one margin is likely to affect both of the other two margins. This suggests that a comprehensive model of the aggregate labor market should explicitly incorporate all three labor market states.

This paper takes a first step toward the development of a unified model of participation, unemployment and employment. The model can be seen as a hybrid of the two classes of models discussed above, extended to allow for idiosyncratic shocks. Abstracting from labor market frictions, an individual in our model solves a textbook problem of labor supply in a dynamic setting with indivisible labor. That is, the individual must decide what fraction of his or her life to spend in employment, and how to arrange the timing of employment relative to the idiosyncratic shocks that they experience. A key property of our calibration is that the solution for lifetime labor supply is interior, i.e., individuals do not want to work in every period of life. An individual in our model also faces frictions just like a worker in the textbook Pissarides model: when employed the individual faces a probability of becoming non-employed, and when not employed, the individual finds an employment opportunity only with some probability.

A natural criterion for assessing the empirical reasonableness of such a hybrid model of employment, unemployment and participation is that it be able to account for both the distribution of workers across the three labor market states and the flows of workers between them. Although our model is purposefully simplified, we show that empirically reasonable versions of it satisfy this criterion. Persistent idiosyncratic shocks play a critical role in allowing the model to match the patterns found in the worker flow data. Without idiosyncratic shocks the model is the same as that studied in Krusell et al. [29], and we show that such a model is unable to match the flows of workers across states. In particular, it cannot match the high degree of persistence for the employment and out of the labor force states that is found in the data. While our benchmark model follows the literature in assuming incomplete markets for risk sharing and borrowing, we also show that this feature per se does not play a key role in allowing the model to match the flows

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