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## Labor market cycles, unemployment insurance eligibility, and moral hazard \*

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#### ABSTRACT

If entitlement to UI benefits must be earned with employment, generous UI is an additional benefit to working, so, by itself, it promotes job creation. If individuals are risk neutral, then there is a UI contribution scheme that eliminates any effect of UI on employment decisions. As with Ricardian Equivalence, this result should be useful to pinpoint the effects of UI to violations of its premises. Our baseline simulation shows that if the neutral contribution scheme derived in this paper were to be implemented, the average unemployment rate in the United States would fall from 5.7 to 4.7 percent. Also, the results show that with endogenous UI eligibility, one can simultaneously generate realistic productivity driven cycles and realistic responses of unemployment to changes in UI benefits.

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#### 1. Introduction

Most models of employment flows in the labor market assume that workers automatically qualify for unemployment insurance (UI) benefits while they are searching for a job. As pointed out by Mortensen (1977), Burdett (1979), and Hamermesh (1979), this simplistic view of how a UI system operates may lead to highly misleading conclusions about its impact on the labor market. To avoid this criticism, several papers taking into account more realistic features of the UI systems have emerged. However, because of the institutional complexities of actual UI systems, these models rely exclusively on numerical methods for their analyses, and, they either assume an exogenous distribution of real wages (Andolfatto and Gomme, 1996) or a non-standard mechanism for its determination (Brown and Ferrall, 2003). In this paper, we advance an analytically tractable version of the standard Mortensen–Pissarides search and matching model in which workers are not

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<sup>†</sup> This contribution combines and extends the results from two previously circulated papers: Faig and Zhang (2009), which analyses a simpler version of the model without idiosyncratic match heterogeneity, and Zhang (2009), which extends the earlier paper with heterogeneous productivities. Both papers were part of Min Zhang's dissertation. We are grateful for the many suggestions we have received in the various formats of this work. In particular, we have benefited from comments by Shouyong Shi, Michael Reiter, Giovanni L. Violante (editor), and two anonymous referees. Min Zhang thanks the financial support from the Leading Academic Discipline Program, 211 Project for Shanghai University of Finance and Economics (the 3rd phase), and Miquel Faig thanks the financial support of SSHRC of Canada. We are the only ones responsible for any remaining errors.

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always entitled to UI benefits because such an entitlement must be earned with prior and not too distant employment, and it can be lost if workers quit their jobs voluntarily or refuse job offers.

If UI benefits are unconditionally received while searching for a job, they unequivocally represent an opportunity cost of employment, and improve the bargaining position of workers while negotiating over wages with their employers. As a result, UI benefits reduce the expected profits of filling a vacancy, and hurt firms' incentives for job creation and therefore employment. In contrast, if UI benefits are conditional on prior employment and a worker cannot collect UI if bargaining with an employer breaks down, UI benefits are no longer an opportunity cost but an indirect benefit of employment. Therefore, UI benefits promote the value of filling a vacancy and stimulate job creation. This is the entitlement effect stressed by Mortensen (1977), Burdett (1979), and Hamermesh (1979) but operating through a new channel. In those papers, the desire to earn UI entitlement reduces the reservation wage of workers searching for jobs, which, in turn, reduces unemployment. In our model, the entitlement effect operates through the bargaining positions of firms and workers. The UI benefits, making the employment match more attractive to workers, enable firms to appropriate a larger fraction of the match surplus, which translates into a stronger incentive to post vacancies.

Even if generous UI benefits encourage the creation of jobs due to the entitlement effect, they may hurt employment due to other effects. With the realistic assumption that the UI agency is not able to perfectly monitor the reason for a job loss, workers are able to collect UI with positive probability even if they quit a job voluntarily or reject a job offer. As a result, UI benefits have two detrimental effects on employment. First, they increase the bargaining power of workers since they can now threat to refuse a job to collect UI, which reduces firms' incentives to create jobs. Second, they may actually trigger actual moral hazard quits or rejections, which directly increases unemployment. In addition to these effects, a generous UI system is also an expensive one, and the fees needed to finance it are an opportunity cost of employment.

Taking into account all these effects, we obtain the following analog to Ricardian Equivalence: If the UI system is fully funded and workers have linear utilities, then contribution fees can be designed to prevent moral-hazard behavior and to render the UI system neutral in the sense that it has no effect on the determination of output and employment. Like Ricardian Equivalence, this irrelevance result should be a useful benchmark to pinpoint the economic effects of a UI system as violations of its premises. That is, the economic relevance of a UI system must be found on the risk aversion of workers or the "improper" pricing of UI services. If workers are risk averse, UI provides the valuable service of smoothing consumption fluctuations in the presence of employment shocks. The Mortensen–Pissarides model typically abstracts from this purpose by assuming linear utilities, and we follow this tradition in this paper. If UI contributions, or equivalently taxes that ultimately fall on employed workers, are not carefully crafted, the positive and negative effects of the UI benefits do not cancel each other for some or all workers. Therefore, the UI system affects the incentives of firms to post vacancies or the incentives of some workers to accept and continue employment relationships.

The details of how workers earn or lose UI eligibility are quantitatively important for the predictions of the model. For example, in our baseline calibration, if a reform could eliminate the moral-hazard effects of UI by making it impossible to collect benefits after rejecting a job, then the long-term average unemployment rate would fall from 5.7 to 4.5 percent. This effect is actually stronger than the effect that would result from changing the scheme of contribution fees to achieve neutrality or from completely eliminating the UI system, in which case the average unemployment rate would fall to 4.7 percent.

Making UI eligibility endogenous offers the following insights on the current debate about the appropriateness of the Mortensen-Pissarides model in explaining the cyclical fluctuations in the labor market. Even though, as in Hagedorn and Manovskii (2008), our model needs a large opportunity cost of employment to generate realistic cycles for unemployment and vacancies, it is able to simultaneously generate realistic responses to productivity shocks and to changes in UI benefits. In contrast, as emphasized by Hornstein et al. (2005) and Costain and Reiter (2008), this simultaneous fit is impossible in the standard Mortensen-Pissarides model. More precisely, in our model the response of unemployment to an increase in productivity is large and of the order of magnitude needed to generate realistic cycles in the labor market. In the standard model, these two responses are similar. Intuitively, the two responses can differ in our model because the entitlement effect reduces the adverse effect on employment of an increase in UI benefits. This mechanism is an alternative to assuming real wage rigidity, as in Hall (2005), Kennan (2010), and Menzio and Moen (2010), to explain why unemployment responds strongly to productivity shocks but weakly to changes in benefits.

The rest of the paper is organized as follows. Section 2 sets up our stochastic version of the Mortensen–Pissarides model with a UI system in which individuals need to earn their UI eligibility. In addition, it establishes conditions that make this system neutral. Section 3 calibrates the model to data in the United States and analyzes its quantitative predictions. In particular, it studies how far apart the UI system in the United States is from the neutral one derived in Section 2. Also, it reports the responses of the model to productivity shocks and changes in UI benefits. Finally, Section 4 concludes.

#### 2. The baseline model

Our model is a stochastic discrete time version of Pissarides (1985) search and matching model with the following two special features: (1) to collect UI benefits unemployed workers must have earned eligibility with a previous job, and (2) the quality of a match between a firm and a worker is heterogeneous.

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