Journal of Monetary Economics 62 (2014) 108–122

Contents lists available at ScienceDirect

Journal of Monetary Economics

journal homepage: www.elsevier.com/locate/jme

Adverse selection and moral hazard: Quantitative implications for unemployment insurance

David L. Fuller *

Department of Economics, Concordia University, 1455 de Maisonneuve Boulevard West, Montreal, Quebec H3G 1M8, Canada

ARTICLE INFO

Article history:
Received 14 September 2011
Received in revised form
24 October 2013
Accepted 30 October 2013
Available online 13 November 2013

Keywords:
Unemployment insurance
Non-participation
Adverse selection
Moral hazard
Dynamic contracts

ABSTRACT

A model of optimal unemployment insurance with adverse selection and moral hazard is constructed. The model generates both qualitative and quantitative implications for the optimal provision of unemployment insurance. Qualitatively, for some agents, incentives in the optimal contract imply consumption increases over the duration of non-employment. Calibrating the model to a stylized version of the U.S. economy quantitatively illustrates these theoretical predictions. The optimal contract achieves a welfare gain of 1.94% relative to the current U.S. system, an additional 0.87% of gains relative to a planner who ignores adverse selection and focuses only on moral hazard.

1. Introduction

Since the work of Shavell and Weiss (1979) and Hopenhayn and Nicolini (1997) a large literature examining the optimal provision of unemployment insurance (UI) has developed. This literature has focused on circumventing the moral hazard problem, which arises when agents exert unobservable effort to find or retain a job. Given the emphasis on moral hazard, existing models of optimal unemployment insurance focus on optimizing the transitions between unemployment (defined as actively searching for a job) and employment. While the literature contains many interesting results, two are robust: an agent's consumption should decrease over the duration of an unemployment spell (Kocherlakota, 2004 and Hagedorn et al., 2010 are two exceptions), and there exist relatively large welfare gains from adopting the optimal contract.

Circumventing moral hazard requires the UI agency to know the utility costs of exerting effort. The analysis in this paper considers the case where agents are heterogeneous in these costs, which remain private information for the agent; as a result, there exists moral hazard *and* adverse selection.[1] The contribution of this paper to the optimal UI literature is twofold. First, analytically it is shown that the inclusion of adverse selection matters for the dynamics of UI benefits. Quantitatively, a plausible, stylized model of the U.S. system verifies that the dynamics of benefits are different from the pure moral hazard case. Second, the stylized quantitative analysis also shows that there exist relatively large additional welfare gains from considering both adverse selection and moral hazard.

Specifically, the adverse selection in my model arises from unobservable, idiosyncratic preference shocks, affecting the marginal rate of substitution between consumption and leisure. As in Wang and Williamson (2002), agents move in and out of employment, exerting unobservable search effort while unemployed, and job retention effort while employed. In some

* Tel.: +1 514 848 2424x3919.
E-mail address: david.fuller@concordia.ca

[1] Alternatively, one can substitute the nomenclature "hidden information" in place of "adverse selection", and "hidden action" in place of "moral hazard".

0304-3932/$ - see front matter © 2014 Elsevier B.V. All rights reserved.
http://dx.doi.org/10.1016/j.jmoneco.2013.10.003

periods, agents may receive a taste shock that makes exerting effort too costly; consequently the agent might prefer not to search in that period.

Large transitions from unemployment (searching) to non-participation (not-searching) in U.S. data motivate the inclusion of heterogeneity in the utility cost of effort (and thus adverse selection). For example, for the period 1994–2004, on average, 30% of unemployed individuals moved to non-participation.[2] The standard moral hazard model of UI, however, does not capture this transition (Andolfatto and Gomme, 1996; Garibaldi and Wasmer, 2005; Pries and Rogerson, 2009; Gautier et al., 2009, and Engelhardt and Fuller, 2012, among others, do include non-participation, but do not analyze the optimal UI scheme). Qualitatively, the model captures this transition, and using the data allows a quantitative illustration of the key implications of including adverse selection. While this quantitative analysis does not account for the full heterogeneity of the group of non-participants, it does suggest important implications from including this dimension in the analysis of optimal UI.

First, incorporating adverse selection has implications for the dynamics of benefits, which remain relevant for policy. Consumption in the optimal contract does not necessarily decrease over the duration of non-employment, as pure moral hazard models suggest. Analytically, there exists a positive probability of consumption increasing over the duration of non-employment, and the quantitative analysis shows that this result is relevant for policy.[3] Specifically, the optimal contract implies that after an initial spell of unemployment, an agent who transitions to non-participation and remains there (under the U.S. system), should receive increasing consumption during the spell of non-participation.

Increasing consumption occurs because to efficiently allocate effort, the UI authority asks each agent to report his desire to remain in the labor force (i.e. their idiosyncratic taste shock). Truth-telling incentives imply an agent with more attachment receives relatively more consumption today in exchange for less consumption in all future periods, while an agent reporting a low attachment receives less consumption today, but is promised relatively more in the future. Although the planner may want to provide incentives to exert effort, by reducing future consumption when non-employed, near the participation constraint, there exists little room for punishment and truth-telling incentives dominate.

To quantitatively illustrate the main results, the model is calibrated to U.S. data and a stylized version of the U.S. system of unemployment insurance, focusing on capturing the unemployment to non-participation transition. In the optimal contract the planner efficiently allocates effort, which is a discrete choice: exert effort or not. In the baseline calibration, the transitions from unemployment to non-participation occurring under the U.S. system are not efficient; i.e. the optimal contract recommends effort from the same agents.

To further evaluate the efficacy of the current U.S. system, imagine switching from the U.S. system to the optimal contract. This switch yields a welfare gain of almost 2% in consumption equivalent terms. To determine what role accounting for the non-participation dimension has in these welfare gains, the optimal contract is compared to an allocation from a "naïve" planner, who ignores adverse selection and focuses only on moral hazard. For the baseline calibration, the optimal contract provides an additional 0.87% in consumption equivalent welfare gains. The comparison is also made over sub-sets of the population, based on age. There exist even larger additional gains from the optimal contract for the youngest cohort (16–24), 1.87%, while much smaller additional gains are available for the oldest cohort (55 and older), 0.30%.

As noted above, the lower bound on expected utility promises plays a role in the increasing consumption result. Both Atkeson and Lucas (1995) and Pavoni (2007) impose such a lower bound in models of optimal unemployment insurance, and analyze how it circumvents the well-known immiseration result. In the quantitative analysis, the lower bound is "endogenized" by studying a general equilibrium version of the planning problem, similar to the analysis in Atkeson and Lucas (1995) and Wang and Williamson (2002). The general equilibrium version determines the steady state distribution over lifetime promised utility induced by the optimal contract. The value of the lower bound is linked to the autarky value of an agent in the U.S. economy, and is further endogenized it by examining the range of autarky values that admit a balanced budget equilibrium in the planning problem.

Temporary shocks remain necessary to generate the decrease in search intensity behind the non-participation transition. In addition to temporary shocks, i.i.d. or more persistent, there may also exist permanent differences between unemployed agents; for example, agents may have innate differences in search "ability." Hagedorn et al. (2010) analyze the optimal unemployment insurance scheme in such an environment, extending the models of Shavell and Weiss (1979) and Hopenhayn and Nicolini (1997), and similar to this paper, have an environment with both adverse selection and moral hazard. Since these permanent differences likely exist, Hagedorn et al. (2010) represents a careful analysis of their consequences for optimal unemployment insurance schemes. The important distinction between the model in Hagedorn et al. (2010) and this paper is that the former does not capture the non-participation dimension. Moreover, Hagedorn et al. (2010) do not offer a comparison of the optimal scheme to the current U.S. policy, which is made here.

The analysis in this paper also relates to the dynamic adverse selection literature.[4] Atkeson and Lucas (1992) represents the paper from this literature most closely related to mine, as they also analyze unobservable, i.i.d., taste shocks. As in this paper, the planner in Atkeson and Lucas (1992) offers high consumption today in exchange for lower future consumption, when reporting a high marginal utility of consumption. A similar provision of incentives also occurs in Thomas and Worral

[2] The 30% is a quarterly average of monthly transition probabilities. See Section 2 for details of my calculations.
[3] All proofs and supplementary appendices are available in the Online Appendix, or at Science Direct.
[4] Since this literature is large, only those papers closely related are discussed.