Optimal unemployment insurance with heterogeneous agents

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Abstract

The framework of a general equilibrium heterogeneous agent model is used to study the optimal design of an unemployment insurance (UI) scheme and preferences for unemployment policy reforms. In a first step, the optimal defined benefit and defined replacement ratio UI systems are obtained in simulations. Then, the question whether switching to such an optimal system from the status quo would be approved by a majority of the population is explored. Finally, the transitional dynamics following a policy change are analysed. Accounting for this transition has an important influence on the support for a policy change.
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1. Introduction

This paper explores the optimal design of an unemployment insurance (UI) scheme as well as the chances for switching to an optimal system using the framework of a general equilibrium heterogeneous agents model with unemployment. An efficient UI system should, on the one hand, provide consumption insurance to risk-averse households who

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are exposed to substantial income risks. On the other hand, excessively generous benefits lead to a high level of unemployment in equilibrium, which has negative welfare effects.

The model economy is populated by finitely lived agents who are subject to unemployment risk. While unemployed, these individuals receive job offers of different qualities, which they can accept or decline. The agents' earning opportunities depend on an individual productivity parameter that improves on the job and declines during unemployment.

The model is calibrated to the German economy and solved numerically in order to perform policy experiments. The UI schemes considered allow for benefits that vary with the duration of the spell (there are 3 distinct benefit levels, for unemployment durations of less then 6 months, less than a year, and more than one year).

Optimal benefit structures are obtained by simulating the model for different levels of risk aversion and for an open and a closed economy setup. The welfare criterion is the expected lifetime utility of young agents. Optimal UI schemes provide considerably higher welfare in equilibrium than the benchmark system, which is modelled after the German unemployment insurance system that was in place until 2004. The most important aspect that determines the efficiency of a system is the benefit level for the long-term unemployed. Setting this parameter too high results in high unemployment rates and high levels of long-term unemployment. For a relative risk aversion of 3, the optimal replacement ratio for long-term unemployed workers is 40%, which is significantly below the benefits that were in place in Germany until 2004.

Having obtained optimal unemployment insurance schemes under various assumptions, the question whether a majority of the status quo population would prefer the equilibrium associated with the optimal system to the status quo is raised. Three main demographic groups who oppose the optimal policies can be identified: unemployed individuals are immediately affected by lower benefits, young low-wealth households would be exposed to very high-income risks under the optimal system, and retired households and workers close to retirement age would suffer from reduced interest rates under the optimal policy, while having little to gain in the labour market. Still, for all scenarios considered, a majority of the population supports the optimal system.

Finally, it is analysed how the approval for the optimal policy is affected if the transition to the new equilibrium is taken into account. In this context, it is important whether the benefits of the regime switch materialise quickly compared to the changes that are perceived as adverse by certain demographic groups. It turns out that these adjustment speeds differ between the scenarios considered in the simulations, and that a majority of the population objects a switch to the optimal UI scheme for a risk aversion as high as 3 if the transition is accounted for.

This paper builds on several contributions to the literature on unemployment insurance.

Modelling an economy populated by liquidity constrained agents, Hansen and İmrohoroğlu (1992) study the consequences of moral hazard for optimal replacement ratios. They find that an optimal insurance has a relatively high benefit level to protect agents from large fluctuations of consumption. However, if moral hazard is introduced, replacement ratios at levels observed in reality may actually make the economy worse off than without any insurance at all.

Costain (1999) was the first to incorporate labour market frictions into a heterogeneous agents setup to analyse welfare effects of UI. His framework was extended by Heer (2003), who employed a model calibrated to the German economy to compute optimal replacement ratios.