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Health insurance and precautionary saving: A structural analysis

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ABSTRACT

Starr-McCluer (1996) documented an empirical finding showing that US households covered by health insurance saved more than those without coverage, which is inconsistent with the standard consumption–saving theory. This study conducts a structural analysis and suggests that institutional factors, particularly, a social insurance or safety net system and an employment-based health insurance system, can account for this puzzling finding. A dynamic equilibrium model is built that combines these two institutions with heterogeneous agents making endogenous decisions regarding saving, the labor supply and health insurance when they are young. The model, in which agents save in a precautionary manner, can generate Starr-McCluer's empirical finding. The result implies that Starr-McCluer's results are not inconsistent with the standard theory of saving under uncertainty, but it does indicate that the standard saving regression model is unable to reveal the precautionary saving motive. Counterfactual experiments are performed to provide implications for empirical analyses.

1. Introduction

Starr-McCluer (1996) argued that the standard consumption–saving theory, which implies that more insured households should save less due to precautionary motives, is inconsistent with the empirical finding that US households covered by private health insurance save more than comparable uninsured households. This paper takes a structural approach to revisit this issue and suggests that two institutions in the US, means-tested social welfare and employment-based health insurance (EHI), can account for the puzzling empirical finding documented by Starr-McCluer.

Starr-McCluer studies the impact of private health insurance on household savings in the American working-age population and tests the precautionary saving hypothesis. Although several econometric methods are applied to control for other household characteristics and factors that also affect saving, the results indicate that health insurance coverage has a significant and positive effect on savings. Table 1 presents part of the empirical results. The coefficients of health insurance coverage (labeled 'PHI coverage') are significant and positive in all the three regressions regardless of the measure of assets.

To conduct a structural analysis, I build a dynamic stochastic general equilibrium model where heterogeneous agents face uncertain retirement or death, idiosyncratic income and medical shocks, and make decisions regarding saving, the labor supply and health insurance. Markets are incomplete, and thus risk-averse agents in the economy have an incentive to save in a precautionary manner and to purchase health insurance. Two institutions, a social insurance (safety net) system and an employment-based health insurance system, are incorporated as key factors to examine the insurance–savings correlation. Although this study focuses on the saving–insurance decisions of the working-age population, social security and Medicare are also incorporated because they affect younger agents' expectations of their lives after retirement.

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Table 1
Empirical finding: regressions with various measures of assets.

Dependent variable	Regression 1 (liquid assets)	Regression 2 (financial assets)	Regression 3 (net worth)
PHI coverage	**2.66***	**2.97***	**1.72***
Permanent Income	1.53*	1.71*	1.69*
Health problems	−0.34*	−0.28*	−0.41*

Source: Starr-McCluer (1996, p. 290). Only selected variables are reported here. PHI coverage and health problems are dummy variables. Other variables include age, race, gender, marital status, education, a dummy of having children and dummies of past and expected inheritance.

* Indicates significance at the 5% level.

The model, in which individuals save in a precautionary manner, can generate Starr-McCluer's (1996) empirical finding for two reasons: (1) the social insurance system creates a strong disincentive to save (as discussed in Hubbard et al., 1995) and to purchase health insurance. However, the availability of health insurance (e.g., insurance offers from employers) reduces the likelihood of accessing social insurance, and so has a positive effect on saving; (2) health insurance status is uncertain because it is highly contingent on employment. Households currently covered by health insurance are in a good state and will save to hedge against losing insurance, a precautionary motive. This reinforces the positive insurance–savings correlation. This paper suggests that Starr-McCluer's finding is not inconsistent with the standard theory of saving under uncertainty. The observed positive pattern is the result of the distortion from the two institutional factors. Counterfactual experiments with various institutional settings are performed, and the results indicate that the standard saving regression model cannot always reveal the true precautionary saving motive within each environment. I show that even if a perfect instrument for insurance status (i.e., a purely exogenous insurance variable) is used in the regression, the same puzzling result can be found as long as the effects of the two institutional factors, the social welfare system and the stochastic EHI, are not well controlled.

The goal of this study is to diagnose the empirical puzzle using a structural approach to provide new light on studies on related saving and insurance issues. This study contributes to the literature pioneered by Kotlikoff (1989) analyzing the effects of health expenditure shocks on precautionary savings and the literature of dynamic equilibrium models with heterogeneous agents in incomplete markets.[2] Several recent studies have examined the impacts of health and medical expenditures in Aiyagari–Bewley type models.[3] However, there are relatively few studies that have applied this approach to the study of health insurance programs, although Attanasio et al. (2010) and Jeske and Kitao (2009) are two exceptions.

The theoretical framework in this study is similar to that of Jeske and Kitao (2009), who analyze the effects of US tax policy on health insurance choices, but is differentiated from previous studies by endogenizing the health insurance decision. Attanasio et al. (2010) use a general equilibrium life-cycle model with incomplete markets, endogenous labor decisions and medical expenditure shocks to evaluate alternative financing schemes for Medicare. Health insurance coverage for young agents is not endogenized because they focus on Medicare, which serves the elderly.[4]

The remainder of this paper is organized as follows: Section 2 introduces the model, and Section 3 presents specifications of the model and calibration. The quantitative analysis and discussion are provided in Section 4, while Section 5 presents the conclusion.

2. The model

This section describes the model settings for the benchmark economy.

2.1. General model environment

2.1.1. Demographics

The economy is populated by a continuum of agents (measure one) who maximize expected discounted lifetime utility from consumption and leisure. The population consists of two generations – the young (working-age) and the old (retired). Young agents supply labor and earn wage income, while old agents no longer work and receive social security benefits. Young agents retire with a probability ρ_o every period, and old retired agents die and leave the economy with a probability ρ_d every period. At the beginning of each period, the economy has new-born young agents replacing those old agents, who died at the end of previous period, such that the measure of total population remains constant. The demographic setting with the probabilities described above implies that the proportion of old agents in the population is $\frac{\rho_o}{\rho_o+\rho_d}$, and that of young agents, $\frac{\rho_d}{\rho_o+\rho_d}$. I do not consider the annuity market for the old in this economy and assume all bequests are accidental and distributed equally to all surviving households.

[2] Bewley (1986), İmrohoroğlu (1989), Huggett (1993) and Aiyagari (1994) pioneered this literature.

[3] For example, Livshits et al. (2007) and Chatterjee et al. (2007) suggested that medical expenditure shock is an important reason for consumer bankruptcy. Palumbo (1999), De Nardi et al. (2006) and Scholz et al. (2006) studied medical expenses to understand the pattern of retirement savings.

[4] The focus of this paper is on the working-age population, similar to Jeske and Kitao (2009), and a life-cycle analysis is not performed. A general equilibrium life-cycle model similar to that in Attanasio et al. (2010) with endogenous health insurance decision is used in Hansen et al. (2012) to evaluate alternative health insurance reform options.