様　式　Ｃ－１９、Ｆ－１９－１、Ｚ－１９　（共通）

科学研究費助成事業　　研究成果報告書

平成　２９　年　　６　月　２２　日現在

機関番号：　１２７０３
研究種目：　若手研究(B)
研究期間：　2014～2016
課題番号：　２６７８０１７３

研究課題名（和文）Population Aging, Long-term Care, and Health Insurance Market: a General Equilibrium Life-Cycle Analysis

研究課題名（英文）Population Aging, Long-term Care, and Health Insurance Market: a General Equilibrium Life-Cycle Analysis

研究代表者

Ｈｓｕ　Ｍｉｎｃｈｕｎｇ（Hsu, Minchung）

政策研究大学院大学・政策研究科・准教授

研究者番号：２０４６７０６２

交付決定額（研究期間全体）：（直接経費）　　2,900,000円

研究成果の概要（和文）：本研究では内在的な長期介護（LTC）支出を用いたライフサイクルモデルを構築した。予備的貯蓄とLTCに関する意志決定に重要な家族構成を捉えるため、このモデルには既婚、未婚家庭の両方を含めた。既婚者はLTCを必要とする配偶者のリスクに直面し、共同資産を早く使い果たす。しかし、LTCを必要とする人々は、インフォーマルケアを与える健康な配偶者の存在によって恩恵を受けられるため、LTCのコストが低減する。HRS及びMEPSというデータを基に、較正モデルを使用し家族の動態の重要性を推定するとともに、最低限のLTCコストを支払う普遍的な公共システムの導入などのLTC政策改革の影響を定量化した。

研究成果の概要（英文）：We build a life-cycle model with endogenous long term care (LTC) expenditures. The model includes both married and single households to capture the family structure that is important for precautionary savings and LTC decisions. Married individuals face the risk of a spouse needing LTC and quickly depleting joint assets.However, those needing LTC can benefit from the presence of a healthy spouse who provides informal care, lowering the costs of LTC. Based on the household-level data, HRS and MEPS, we use the calibrated model to estimate the importance of family dynamics and quantify the impacts of LTC policy reforms such as the provision of a universal public system that pays for a minimum level of LTC costs.

研究分野：　Public Economics, Macroeconomics, Health Economics

キーワード：　Long-term care　Saving　Medicaid　Population Aging

１．研究開始当初の背景

Long-term care (e.g. nursing home) expenditures represent one of the largest financial risks facing the elderly. As discussed in Brown and Finkelstein (2007 JPubE and 2008 AER), although the risk mainly happens in the end of life-cycle, it is very expensive. For example, according to the report of the US Congressional Budget Office, at $135 billion in 2004, expenditures on long-term care represent 8.5% of total health expenditures for all ages.

The demand of long-term care will significantly increase when the population is more aged and the life expectancy is longer. The real long-term care expenditures are projected to triple over the next 35 years due to rising medical cost and population aging (Brown and Finkelstein, 2008). However, it is likely that public health care systems will not be able to provide sufficient coverage on the long-term care costs because of potential government financial problems in those aging economies.

Previous studies have shown that population aging will largely increase the cost of public health care system. Attanasio et al. (2011, Chapter in NBER book, Demography and the Economy) suggest that the US labor income tax will have to increase from 23% in 2005 to 36% in 2080 to finance the rising costs of Medicare, which provides health insurance to individuals with age 65+. My previous study (Hsu and Yamada, 2013, working paper, GRIPS), investigates the tax burden of financing Japan's universal health insurance (UHI) system and potential fiscal reforms given the forecasted population aging in the next 40 years. We show that the government will need an additional 9-14% labor income tax only for financing the extra cost of UHI with the 2050 population age structure. Given that the burden of financing social welfare is already heavy in most of the developed economies, it is less likely that public care programs can sufficiently cover the long-term care when it is more needed in the near future. Therefore, a development of a well-functioning long-term care insurance market may largely help individuals to insure themselves against health risk over the life cycle and rely less on public assistance, which will be financially fragile in an aged economy. However, empirical studies have found the size of the private long-term care insurance market is very small. Brown and Finkelstein (2007, JPubE) conduct an empirical investigation and suggest that supply side market failures is unlikely, by itself, to be sufficient to explain the small market size.

Brown and Finkelstein (2008, AER) further provide a theoretical explanation and suggest that the crowding-out effect of Medicaid (a means-tested public health insurance in the US) on private insurance of long-term care is an important factor that limits the private market. The mechanism of the crowding-out is that individuals have a lower expected cost on long-term care because they have a chance to receive benefits (as a partial insurance) from Medicaid/public assistance, but insurance company's expected cost of long-term care is higher because private insurance is the primary coverage. Brown and Finkelstein name the distortion an "implicit tax" and suggest that if there is no that implicit tax, individuals are willing to pay for private insurance contracts that provide better coverage than the public Medicaid.

２．研究の目的

This project aims to perform a comprehensive general-equilibrium life-cycle analysis on the long-term care insurance that delivers policy implications for aging economies with an international cooperation among researchers from National Graduate Institute for Policy Studies (Japan), University of California, Los Angeles (US) and Centre of Excellence in Population Ageing Research / University of New South Wales (Australia). We extend and formalize the mechanism discussed in Brown and Finkelstein (2008) to investigate the interaction between public assistance and private long-term care insurance and other factors of market failure. The goal is to provide both qualitative and quantitative policy implications – to understand

(1) how and to what extent alternative policies can reduce the “implicit tax” and increase the private long-term care insurance coverage;
(2) how and to what extent a well-functioning private long-term care insurance market can reduce the dependence on and the cost of public assistance for the elderly in an aging economy;
(3) the corresponding welfare changes.

３．研究の方法

We use household level panel data with health, long-term care and insurance information and establishment of theoretical framework (a DSGE life-cycle model with details of long-term care risks and endogenous insurance demand) to provide a data analysis and perform a quantitative theoretical analysis.
The details are described as follows:

(1) We have collected household level panel data (HRS and MEPS) that allows us to estimate the demand of long-term care and analyze the consumption/saving/medical care behaviors in old ages. The data contain information of health insurance coverage, health status, employment status, income, education and other household characteristics.
(2) We develop a theoretical model – a dynamic stochastic general equilibrium life cycle model with heterogeneous agents (in terms of education, health, income) to analyze the behaviors of consumption, saving and responses to the long-term care shocks. In the model, individuals face several risks – income risk, health/medical expenditure risk and long-term care risk in old ages. The institutional features of public assistance/insurance are considered in the model. Given the public welfare programs and options of private insurances, individuals choose consumption/saving endogenously over the lifecycle, private long-term care insurance for their old ages and the long-term care expenditures.
The model is able to analyze individuals’ life-cycle behavior for hedge against risks, the demand of long-term care and the impact of aging in the presence of public assistance and private insurance options.

４．研究成果

We have collected data, developed a comprehensive theoretical model and conducted several policy experiments.
A part of our research results was presented at the largest conference of economics -- American Economics Association 2017 annual meeting in Chicago.

It's also scheduled to present the research at the largest macroeconomics conference -- Society of Economic Dynamics 2017 annual conference in Edinburg in June.
More presentations of the research results will be arranged and we will submit a formal paper to a top academic journal for publication.

５．主な発表論文等
（研究代表者、研究分担者及び連携研究者には下線）

〔雑誌論文〕
（計 5 件　）

1. Aging, Low Fertility and Development – What is the right population policy for developing countries in Asia? Minchung Hsu, *Economics Classroom in Nikkei News*, pp.27, May 30, 2017 (in Japanese), **No referee reading**
2. How developing countries can deal with rising health care costs, Minchung Hsu,, *Nikkei Asian Review,* pp.1-2 (Nov. 23, 2016) , **No referee reading**
3. The Development of Universal Health Insurance Coverage in Thailand: Challenges of Population Aging and Informal Economy, Minchung Hsu, Xianguo Huang and Somrasri Yupho, Social Science & Medicine, Elsevier, 2015, 145, 227-236 2. **referee reading**
4. Financing National Health Insurance: Challenge of Fast Population Aging, Minchung Hsu and Pei-Ju Liao, Taiwan Economic Review (Issue of Macroeconomic-Theory and Empirics), 2015 43:2, 145-182. **referee reading**
5. Health Insurance Reform – The Impact of a Medicare Buy-in, Minchung Hsu, Gary Hansen and Junsang Lee , Journal of Economic Dynamics and Control, Elsevier, 2014, 45, 315-329. **referee reading.**

〔学会発表〕（計 8 件）

1. Reforming Medicaid Long-term Care, Minchung Hsu, AEA 2017 Annual Meeting, Chicago, US, Jan 6 2017.
2. Financing Aging in Developing Economies: Feasible Taxation and Optimal Population Policy, Minchung Hsu, Asian Development Bank Institute and Asian Growth Research Institute Workshop on Aging in Asia, Kitakyushu, Fukuoka, Nov 12, 2016
3. Financing Aging in Developing Economies: Feasible Taxation and Optimal Population Policy, Minchung Hsu, Econometric Society Asian Meeting, Doshisha University, Kyoto-shi, Kyoto, Aug 12, 2016
4. Financing Aging in Developing Economies: Feasible Taxation and Optimal Population Policy, Minchung Hsu, 2016 Growth, Trade and Dynamics Conference, Taipei, Taiwan, June 24, 2016
5. Aging, Population Policy and Fiscal Challenges in Developing Economies, Minchung Hsu, Econometric Society World Congress, Montreal, Canada, Aug 17, 2015
6. Aging, Population Policy and Fiscal Challenges in Developing Economies, Minchung Hsu, Public Economics Theory 2015 Conference, Luxemburg, July 3, 2015
7. Revisiting Private Health Insurance and Precautionary Saving: A Theoretical and

Empirical Analysis, Minchung Hsu, Public Economic Theory 14th Conference, Seattle, US, July 12, 2014

8. Health Insurance Reform – The Impact of a Medicare Buy-in, Minchung Hsu, Conference of Rapid Aging and Chinese Pension Reform, Shanghai, China, June 3, 2014

６．研究組織

(1)**研究代表者**

シュウ　ミンジョン（HSU, Minchung）
政策研究大学院大学・政策研究科・准教授
研究者番号：20467062