

Geographical Variation and Convergence of Health in Japan

—Medical Resources, Services, and Outcome—

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Summary

[Background] Jared Diamond popularized the phrase “geography is fate” while Nouriel Roubini paired “demography is fate”. This study combines geography and demography to account for a relationship among medical resources, services, health outcome, and economic shocks in Japan. Over a half century Japan has adopted a nationwide universal health insurance plan and has successfully achieved higher health outcomes than other countries including longevity. Still there have been wide geographical variances in medical resources (physicians, nurses, beds), medical practices, and medical cost such as cost/person (C/N). Based on the notion of a “suppliers induced demand”, the government has tightly regulated new entry of hospitals, investment in medical resources. This study examines the relationship among, population, medical resources, medical services, and health outcome.

[Method and Data] This study uses medical cost data of the “Municipal Health Insurance Plan” and health related data of 47 prefectures and several hundred “medical administrative areas” in 1981-2014. We distinguish three types of medical services “hospitalization”, “outpatient”, and “dental” services for the “general” and the “aged” population. This study uses a method to identify the source of convergence of geographical variance of income as in Asrdubali, Sorensen, and Yosha (1996) and Nakakugi and Fujiki (2005). We decompose “Cost per capita (C/N)” as the product of “cost per day (C/D)”, “days per event (D/E)” and “events per population (E/N)”, thereby we can identify the sources of variance and factors inducing convergence of medical cost across regions. We also estimate speed of convergence in an absolute and conditional convergence sense as in Barro and Sala-i-Martin (1992).

[Results] We find significant geographical variance across regions in “cost per capita (C/N)” for the “aged hospitalization” in the early 1980s, which has decreased rapidly since then. This is caused by the decreasing variance of “events per population (E/N)” which in turn is closely related to “beds per population”. A suppliers induced demand assumption holds for the aged hospitalization. The introduction of the long-term care insurance plan in 2000 shifted the aged hospitalization to long-term care and had further induced convergence of C/N for the aged hospitalization. Variance of cost per day (C/D) for aged hospitalization and aged outpatient services are found to be higher in a manner to compensate declining medical expenditure. We find high speed of conditional convergence for the aged hospitalization and dental services while we do not find convergence in outpatient services.

[Conclusions] Although geographical variance had been a policy concern, it was the variance of hospitalization of the aged. Government regulation limiting entry and increase medical resources as well as introduction of long-term care insurance in 2000 significantly helped convergence. Economic shock is found to be absorbed via medial expenditures without affecting health outcome.

Key words: medical, health, geography, convergence JEL: J14, J18, O49

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