The Link between Ageing & Medical Expenditures: Experience from Prefecture Level Data in Japan

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Abstract (1000 words)

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1. Background: The demographic transition of population ageing in Japan has the potential to alter the development process of the country. Ageing may affect the size and composition of the labor-force that can bear important implications for the economic growth. The component of aged population also bears a straightforward impact on the medical care expenditures due to rising health care needs of the elderly. Contemporary research examining the spending patterns of the elderly within the Life Cycle Hypothesis predicted a downward pressure on household saving and higher shares of consumer spending on health care expenditures. Studies based on survey data of household consumer expenditure show that the shares of housing-related services and health in total household expenditure to be steadily increasing with ageing in both United States and European Union (Lee and Mason, 2007). If the spending pattern of the elderly indeed change and bear a negative impact on current consumption, then one can envisage a fall in growth rates due to declining domestic demands.

2. Objective:

The objective of this paper is to examine the likely impacts of ageing on the medical spending on the basis of using the prefectural (provincial) data from Japan. Our analysis proceeds in the following sequences. We first examine the extent of population aging in Japan by analyzing the inherent characteristics of old-age and child dependency ratios. The population pyramids are also examined by splitting the total population between male-female categories. Subsequently, we examine the regional patterns of ageing for 47 prefectures in Japan. Finally, we attempt to assess the ageing impacts on the aggregate as well as health expenditures.

3. Methodology: A number of studies have examined the impacts of ageing on the consumer spending by utilizing the survey data on consumption expenditure for different age categories. These results seem to indicate that the consumption spending varies depending on the age-distribution of population and the consumption expenditures remains high for the of elderly. An attempt has been made in this paper to investigate the impacts of ageing on the total as well as medical expenditures by using the aggregate consumer spending data.

We specify two single-equation econometric models to explain the total per-capita total expenditures (PCE) and per-capita medical expenditures (PCME) in terms of per-capita income (PCY) and old-age dependency (OAD). We subsequently define the two regression equation as follows:

$$PCE_i = f\ (PCY_i, OAD), \qquad (1)$$

with: $f'_{PCY} > 0,\ f'_{OAD} > 0,$

$$PCME_i = f\ (PCY_i, OAD), \qquad (2)$$

with: $f'_{PCME} > 0,\ f'_{OAD} > 0,$

We have constructed individual series on each of the variables for 47 prefectures referring to the time period 2024. Our regression exercises are undertaken using cross-sectional data.

4. Data Base: The basic data on regional age distribution of population, medical expenditures are derived from several publications of 'Statistical Handbook of Japan' brought out by Statistics Bureau, Ministry of Internal Affairs and Communications, Japan, Handbook of Health and Welfare Statistics 2023, Ministry of Health, Labor and Welfare of Japan, and Outline of Health, Labor and Welfare Statistics, Director-General for Statistics, Information System Management and Industrial Relations Ministry of Health, Labor and Welfare, Japan. The prefectures are: Hokkaido, Aomori, Iwate, Miyagi, Akita, Yamagata, Fukushima, Ibaraki, Tochigi, Gunma, Saitama, Chiba, Tokyo, Kanagawa, Niigata, Toyama, Ishikawa, Fukui, Yamanashi, Nagano, Gifu, Shizuoka, Aichi, Mie, Shiga, Kyoto, Osaka, Hyogo, Nara, Wakayama, Tottori, Shimane, Okayama, Hiroshima, Yamaguchi, Tokushima, Kagawa, Ehime, Kochi, Fukuoka, Saga, Nagasaki, Kumamoto, Oita, Miyazaki, Kagoshima and Okinawa.

5. Plan of Study: The paper is structured as follows. Our analysis begins by reviewing the arguments surrounding the development implications of population aging in section 2. In section 3, we analyze population ageing by examining child dependency and old-age

dependency ratios for the economy. In section 4, the regional dimensions of ageing are analyzed. Section 5 provides the empirical model and the variable relationships along with the description of data base. The results of econometric estimation are provided in section 6. Finally, the inferences derived from the study and policy recommendations are presented in section 7. (Word: 668).