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# Japanese government and utilitarian behavior



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### ABSTRACT

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When optimal policies for governments are studied in economics, social welfare functions are often used, but the functions are typically unobservable. This paper estimates the social welfare function of Japan's central government from FY 1955 to 2010. We assume that the central government determines its subsidies to the local governments of prefectures to maximize a social welfare function, which is assumed to be a weighted sum of the utility of a representative resident of each prefecture. The weight on each prefecture is estimated from the amounts of subsidies using the method developed by Iritani and Tamaoka (2005). Using regression analysis, we show that the weight on a prefecture is approximately equal to the prefecture's population. The correlation coefficient between weights and populations is 0.969. This implies that the social welfare function is approximately the (unweighted) sum of the utilities of all individuals in the entire country, that is, *utilitarian with identical weights on all individuals*. *J. Japanese Int. Economics* **36** (2015) 90–107. Graduate School of Economics, Kobe University, 2-1 Rokkodai-cho, Nada-ku, Kobe 657-8501, Japan; Japan Society for the Promotion of Science, 5-3-1 Kojimachi, Chiyoda-ku, Tokyo 102-0083, Japan.

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## 1. Introduction

A government's policy reflects the government's preferences, which are typically unobservable. However, if the government determines its policy by maximizing a social welfare function, we can estimate this function by using the chosen policy as the revealed preference of the government.

We focus on Japanese central government's preferences for local governments. Our purpose is to determine the social welfare function of the central government and to investigate the determinants of the weight the central government attaches to each local government. We assume that the social welfare function is a weighted sum of each prefecture's utility, whose form is given by the natural logarithm of the per-capita prefectural income. Our approach is the same as that of [Iritani and Tamaoka \(2005\)](#), that is, to calculate the weight the central government attaches to each of the 47 prefectures in the country, from the amounts of subsidies paid to the prefectures, which are assumed to be optimally determined by the central government. By using data, [Iritani and Tamaoka \(2005\)](#) show that the central government gives more weight to urban areas. Since urban areas are typically populous areas, we investigate the relation between the weights and the populations of prefectures. We find that their correlation coefficient is approximately 1. This implies that approximately, the relation between weights and populations is linear. We also show that *the weight given to a prefecture by the central government equals approximately its population share in the country*. [Fig. 1](#) depicts the proportional relation between populations and weights for nine years between FY 1955 and 2010. The lines in these graphs are regression lines obtained by pooled OLS of these nine years. The regression result is  $\alpha_i = 1.04\bar{N}_i - 0.001$ , where  $\alpha_i$  is the weight on prefecture  $i$ ,  $\bar{N}_i$  is the population share of prefecture  $i$ , and  $\bar{R}^2 = 0.94$  is the coefficient of determination.<sup>1</sup>

This result implies that the social welfare function is given by  $\sum_i (1.04\bar{N}_i - 0.001)u_i = 1.04\sum_i \bar{N}_i u_i - 0.001\sum_i u_i$ , where  $u_i$  is the utility of a resident in prefecture  $i$ . Normalizing the weights, the social welfare function is equivalent to  $0.999\sum_i \bar{N}_i u_i + 0.001(-\sum_i u_i)$ , which implies that 99.9% of the social welfare function is utilitarian with identical weights.<sup>2</sup>

Japanese local public financial system has been said to equalize fiscal revenues of local governments. According to [DeWit and Steinmo \(2002\)](#), the average of per-capita revenues after redistribution of the five lowest-taxed prefectures (rural areas) is higher than that of the five highest-taxed prefectures (urban areas). Hence the system is said to be transferring excessively to rural areas. For example, [DeWit and Steinmo \(2002\)](#) write, "the system clearly 'over-equalizes', as it leaves Japan's rural areas with a much higher index of per-capita revenues than the urban areas, a phenomenon that is not evident in the other countries" (171). [Akai et al. \(2003\)](#) write about local allocation tax, which is a fiscal transfer used for intergovernmental fiscal adjustments, saying, "the status quo that the amount of transfer of local allocation tax is in excess, and interregional redistribution is gone too far is common sense among critics and supporters of local allocation tax" (22). This characteristic can be explained by the utilitarian social welfare function. If the central government has the utilitarian social welfare function, the central government tries to equalize per-capita consumption. For per-capita consumption to be equalized across prefectures, rural areas, where per-capita income is low, need more fiscal transfers than urban areas. Hence the amounts of per-capita fiscal net revenues after redistribution are higher for rural areas than for urban areas.

We now discuss two issues of our basic model. First, we consider the gap between populations and weights. To do so, we investigate some features of prefectures where the gap between the weight and the population is large. We consider the number of National Diet members in each prefecture.<sup>3</sup> The reason is as follows. Fukui and Tottori prefectures, whose weight-population ratios are respectively the second and the third highest of the 47 prefectures, also have many Diet members: the ratios of the number of Diet members to the population in these prefectures are respectively the fourth highest and the highest of all prefectures. On the other hand, Kanagawa and Chiba prefectures, which have the

<sup>1</sup> The standard error of the intercept is 0.0006 and that of  $\bar{N}_i$  is 0.037. The coefficient of population share is statistically significant at the 1% level.

<sup>2</sup> In Section 2, we consider another factor, the size of land.

<sup>3</sup> The National Diet is Japan's bicameral legislature.

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