Nuptiality and Marital Fertility Effect on Municipality-level TFR in Japan: An application of Log-Linear Model

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The total fertility rate is an ideal period measure for an assessment of regional differences in fertility. However, it does not uncover underlying components of determinants: nuptiality and marital fertility. To enhance understanding of the fertility decline processes and respective regional patterns, several methods for decomposition were proposed. Celebrated Coale's *I* indices (Coale and Treadway 1986) and Yamauchi's model for a child-woman ratio (Yamauchi 2006) like others have some limitations related to indirect standardization and measurement of marital fertility.

This study re-examines the causal relationships between marital fertility and nuptiality, and then the latter was further divided into direct effect on general fertility and an indirect effect via marital fertility of marriage timing. We specify these relationships between the total fertility rate and the proportion married of reproductive-age women in the log-linear form, which aids to recover the components similar to the Coale's *I* indices.

Our estimates for the complete number of children ever born demonstrate close similarity to the regional patterns shown by the result from sample surveys and the Population Census of Japan. This suggests that only with relatively simple variables and methods, demographic theories and methodologies can provide useful information in practice.

【Key Words】 municipality-level total fertility rate, nuptiality, marital fertility, log-linear model

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