

Are externality of factories underestimated?;
a random bid rent approach using spatial population distribution

Ryo Itoh¹

Abstract

This study extends random bid-rent model by which bid-rent of each type of household is identifiable only with easily accessible aggregated population data of each type in each small district, while previous models require information on type of occupants of each individual land for that estimation. We apply that new methodology to estimate bid-rent of non-factory workers living in Tokyo 23 wards of Japan, whose coefficient for accessibility to factories is interpreted as unbiased negative externalities from those facilities. Estimated bid-rent function of non-factory workers shows 6.6% large gradient of coefficient for such accessibility comparing with OLS estimation of land price which is considered to underestimate true negative externality because OLS displays bid-rent of factory workers whose average commuting cost decreases in the accessibility.

Key words: *externality, hedonic, random bid-rent, aggregated data.*

JEL classification: R21, Q51.

¹ Nagoya-city University, Yamanohata 01, Mizuho-ku, Nagoya-city, Aichi-prefecture, Japan 467-8501.
E-mail:ryoitoh1128@gmail.com Tel: +81-052-072-5744