

When is the city sustainable?: A unified model of von Thünen and Melitz

Hiroshi Goto¹

^a*Graduate School of Economics, Kobe University, 2-1, Rokkodai-cho, Nada-ku, Kobe, Hyogo, 657-8501, Japan*

Abstract

We develop a continuous location-space model with heterogeneous firms and investigate the conditions under which the spatial concentration of economic activities is sustainable. Introducing firm heterogeneity, we can assess the difference of the number of consumable goods among locations, and show that it makes cities more attractive and strengthens their *lock-in effect*. Furthermore, the present model can analyze how the spatial structure depends on the transport technology and population size in the economy. Particularly, if transport costs of agricultural goods are too high, the supply of agricultural goods to the single city will never be sufficiently large to maintain the city for any population size.

JEL classification: R13, R14, R30

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