

# Localized knowledge spillovers and patent citations: A distance-based approach\*

Yasusada Murata<sup>†</sup> Ryo Nakajima<sup>‡</sup> Ryosuke Okamoto<sup>§</sup> Ryuichi Tamura<sup>¶</sup>

January 16, 2011

## Abstract

We develop a distance-based approach to localized knowledge spillovers by incorporating the concept of control patents (Jaffe, Trajtenberg, and Henderson 1993) and the construction of counterfactuals (Duranton and Overman, 2005), while using the data at the census place level. Unlike the existing literature, where the extent of localized knowledge spillovers is detected at the state or metropolitan statistical area level, our approach captures cross-boundary spillovers. We revisit the recent debate by Thompson and Fox-Kean (2005) and Henderson, Jaffe, and Trajtenberg (2005) on the existence of localized knowledge spillovers, and find solid evidence supporting localization, even when finer controls are used.

**Keywords:** localized knowledge spillovers; distance;  $K$ -density; patent citations; control patents; counterfactuals

**JEL classifications:** O31; R12

---

\*This paper was presented at the 2010 Asian Conference on Applied Micro-Economics/Econometrics, at the Applied Microeconomics Workshop at Kyoto University, and at the 24th Applied Regional Science Conference in 2010.

<sup>†</sup>Advanced Research Institute for the Sciences and Humanities, Nihon University (murata.yasusada@nihon-u.ac.jp).

<sup>‡</sup>Department of Economics, Yokohama National University (rn231@ynu.ac.jp).

<sup>§</sup>National Graduate Institute for Policy Studies (rokamoto@grips.ac.jp).

<sup>¶</sup>Graduate School of Humanities and Social Sciences, University of Tsukuba (tamura@dpipes.tsukuba.ac.jp).