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Title: Growing from Agglomeration: A Semiparametric Varying Coefficient Approach

It is conventional wisdom that China's rapid industrialization in recent years is marked by increased agglomeration. This paper examines whether the productivity spillover effects benefited the clustered firms, and if so whether human capital affected firms' absorption of spillovers. To analyze this, we use a semiparametric spatial autoregressive production function in which coefficients are smooth unknown functions of firms' human capital. The varying coefficients not only allow for flexible interactions between human capital and other inputs, but also permit heterogeneous spatial dependence and spillover effects across firms. While the commonly used spatial weighted matrix captures possible learning opportunities among firms, we hypothesize that a firm with more human capital is better at seizing these opportunities. Furthermore, we tackle the simultaneity issue generated by the endogenous inputs using the proxy variable method. We implement this model empirically to analyze productivity of China's computer and peripheral equipment industry from 1998 to 2007, and analyze the effects of human capital on input elasticities as well as productivity spillovers.