Urban Population and Urban Nature: A Difficult Relationship

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Abstract

Increasing urban population puts urban nature – in particular green space and clean air – under pressure, as competition for space increases and more people emit pollutants. Yet, urban nature has characteristics of a public good. An increasing number of people benefiting from urban nature calls for an increasing supply, ceteris paribus. This paper develops a theoretical framework to formalize this trade-off. We show that in the unregulated market equilibrium, urban nature declines with urban population density. Under efficient supply of urban public goods, the supply of urban nature is higher, and may increase or decrease with population density, depending on the elasticities of marginal utility and marginal costs.

The empirical findings, based on global data, support the theory. For low quality of governments we find a negative effect of urban population density on green space and air quality, an effect that is mitigated by better governmental quality. We find that, from the worst to the best governance in our sample, the population elasticity reduces in absolute value from -0.95 to -0.19 for green space and -0.58 to -0.02 for air quality. That is, in our preferred specification, the sizable negative effect of population growth under bad government almost vanishes for cities with good policies. For the upper quintile of governmental quality, the population elasticity of environmental public good supply is positive.

JEL-codes: H41, H11, R14, Q52, Q58, R11

Keywords: Urban Economics; Government Effectiveness; Environmental Public Goods; Urban Green Space; Air Quality; Population Density; Public Policy

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