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Willingness to Pay for a Reduction in Air Pollution: a Hedonic Analysis in Urban Bogotá

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Abstract

This study attempts to value air quality (a non marketable good) from the urban housing market in Bogotá (a marketable good). Furthermore, the study examines the impacts of air pollution on housing values. By means of a Geographical Information System (GIS), the housing market is characterized from a random sub-sample of 1006 observations that correspond to properties within the 19 localities of the Capital District of Bogotá. Total of Suspended Particles (TSP) is used as the pollution variable. The methodological framework for estimations is based on a hedonic price model. This approach establishes a relationship between the price of a marketable good (e.g., housing) and the amenities and characteristics this good contains (e.g., air quality, presence of parks, and structural features such as built area, residential or commercial use, etc.). Therefore, if variations in air pollution levels occur, then households would change their behavior in an economic way by offering more money for housing located in highly improved environmental areas.

In the final analysis, estimations suggest that an increase of 1 per cent in the emission level of TSP decreases property values in 0.123 per cent. For the average housing price of Col.$37,506,800 (US$24,322), the marginal willingness to pay for a reduction of 1 % in the emission levels is Col.$47,731 (US$31). In the aggregate of the Capital District of Bogotá, this reduction would mean benefits of more than Col.$47.348 million. (US$30,703,387) (All numbers in 1998 prices). This would indicate that a control pollution policy brings as a result substantial monetary benefits for both house owners and local government authorities. The results of this study are likely to be sub-valued since the monetary valuation of health-related problems and other impacts of air pollution are not taken into account.

Keywords: Air pollution, environmental valuation, hedonic methods