

## Housing prices and crime perception

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Received: 14 December 2010 / Accepted: 21 June 2012 / Published online: 12 September 2012  
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**Abstract** In this article, we combine data from the housing market with data from a victimization survey to estimate the effect of crime perception on housing prices in the City of Barcelona from 2004 to 2006. Using dwelling data and a hedonic price model (using both OLS and quantile regressions), in the first stage, we estimate the shadow price of the location of dwellings. In the second stage, we analyse the impact of crime perception, after controlling for other district characteristics such as local public spending and immigration, on this locational valuation. After accounting for the possible endogeneity of crime and housing prices, our findings suggest that crime exerts relevant costs beyond its direct costs. Indeed, a one standard deviation increase in perceived security is associated with a 0.57 % increase in the valuation of districts. Moreover, in districts perceived as being less safe than the average for the City of Barcelona, houses are highly discounted. Less safe districts have on average a valuation that is 1.27 % lower.

**Keywords** Housing prices · Crime perception · Security perception · Hedonic prices

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**JEL Classification** K42 · R21 · R31

## 1 Introduction

Crime and the fear it generates are among the most important determinants of individual welfare and of expected returns on many economic activities. In particular, robbery, theft, breaking and entering and the fear of these crimes inflict many direct and indirect costs on city residents, including the monetary value of property stolen or damaged; insecurity, anxiety and lack of safety; and an impact on property values. Several studies have sought to quantify the welfare and social costs associated with crime (see Soares 2010 for a critical review). Anderson (1999) calculates the social costs of crime for the US at \$1 trillion, while according to UK Home Office estimates, the consequences of crime against individuals and households account for £25 billion of the £60 billion total cost of crime (Brand and Price 2000). Recently, Detotto and Vannini (2010) have quantified the cost of crime in Italy at €38 billion.

A high crime rate is strongly and negatively associated with neighbourhood quality, having a marked impact on the prices homebuyers are willing to pay for a house. In other words, as crime is perceived as detrimental, individuals may be discouraged from buying a house and this behaviour is, in turn, reflected in the market property price. Moreover, as Gibbons (2004) notes, the fear of crime through its indirect effect on housing prices may also “inhibit local regeneration and catalyse a downward spiral in neighbourhood status”.

In this article, we combine district level data from the housing market and a victimization survey in the City of Barcelona from 2004 to 2006 to estimate the effect of crime perception on housing prices. In the first part of the article, we propose a two-step estimate using both OLS and quantile regressions to quantify the impact of crime perception on housing values. Using dwelling data and a hedonic price model, in the first stage, we estimate the shadow price of the location of dwellings. In the second stage, we analyse the impact of crime perception, after controlling for other area characteristics such as local public spending and immigration, on this locational valuation.

As the relationship between housing prices and crime is likely to be endogenous (see discussion below) in the second part, we test the robustness of our previous results by providing instrumental variable (IV) estimates.

The literature has made extensive use of hedonic price models to quantify the value of spatial differences, for example, in education (Black 1999), in transport facilities, amenities and air pollution (Chay and Greenstone 2005) on housing prices. In this framework, the seminal study by Griliches (1971) popularised models of this type, while Rosen (1974) gave them a theoretical framework and established how heterogeneous products are a compound of different characteristics.<sup>1</sup> The marginal implicit

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<sup>1</sup> Hedonic models are based on the modern theory of consumer choice, that is, consumers extract utility not from the product itself but from its characteristics (see Lancaster 1966). Goodman (1998) and Colwell and Dilmore (1999) point out that it was Court (1939) who first proposed the hedonic price methodology. Griliches (1971) popularised this methodology; nevertheless, from 1941 to 1971 other papers also used the hedonic methodology (see Tinbergen 1951).