

A Review of the Impact of Neighbourhood Crime on Residential Property Values

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Abstract: The consequences of residential neighbourhood crime does not space property values in that it tends towards discouraging housing investment, yet there is paucity of research in this regard. This study reviews prior studies on property crime in which they specifically focused into the impact of crime on housing prices. The studies are classified by recency of publication, researcher's academic/professional specialisation, method of analytical tool, country of publication and the degree of impact. A rigorous review of the relevant literature was generated through various online data bases like scopus, emerald, science direct, SAGE and Google scholar among others. The review reveals that there is dearth of recent publication on the impact of crime on housing price notwithstanding its attendant consequences on individuals, professionals and the public sector alike. It is however, recommended that more research studies should be sponsored in this regard. The policy implication of this study includes boosting public revenue through property taxes as well as that of the property manager and valuer. It is also intended to promote sustainable housing geared towards healthy living.

Key words: Impact, property crime, housing, values, price

INTRODUCTION

Residential property is important to humanity not only because it provides shelter but in most cases it also satisfies psychological and economic needs. From the economic angle, over the year, globally, residential property (housing) had been a veritable source of investment. In fact residential property other forms of real properties (industrial, agricultural, commercial and the likes) as an investment is said to have lower risk which makes it more attractive and profitable because of the security and regularity of income and the high level of liquidity and leverage (Olajide *et al.*, 2013). However, as a result of urbanisation and industrialisation coupled with increasing rate of unemployment, homelessness and economic downturn residential investment is gradually becoming unattractive due to the consequences if these vices-residential neighbourhood crime. Property crime ranges from burglary, armed robbery, rape and murder. Studies have it that property crime is capable of causing neighbourhood decline which can manifest in an area being stigmatised, residential mobility and general reduction in both rental and capital values (Bogges *et al.*, 2013; Lynch and Rasmussen, 2001).

So far, issues relating to property crime and residential property value had been a subject of discussion especially when the menace tends to be

spreading rather than being checkmated. It will therefore not be out of point to inquire on how frequent has studies being on the subject; the response to the menace between the developed and the developing economies; professionals involved in the existing studies with a view to identifying the degree of the involvement of estate valuers/realtors. Bearing all these in mind, it is the intention of this study to make a careful review of existing literature in the area of the impact of property crime on residential property values.

Evidence from the US according to Hellman and Naroff (1979), Thaler (1978), Lynch and Rasmussen (2001) suggest that crime rates do affect property values, although the effects according to them may be small below high-crime thresholds. Lynch and Rasmussen (2001) find out that a 1% increase in violent crimes reduces prices by 0.05% but also reported positive associations between property crime rates and property prices. This they attribute to higher reporting rates in wealthier neighbourhoods but higher victimization rates may provide a better examination. Researcher in cities such as Boston, Baltimore and Chicago confirmed that there are sizeable impacts of local crime rates on house prices. For instance according to Gray (1979) research in Boston suggested that 5% decrease in crime could result in \$7-30 mln. in increased tax revenue. Furthermore, Dubin and Goodman examined the effects of

local crime rates on house values in Baltimore City and suburban Baltimore county, controlling for structural housing features and school quality. This approach typified hedonic price analysis and allows the researchers to discover how much a buyer was willing to pay for specific features of a house and a neighbourhood.

Rizzo (1979) confirmed that crime in a community affects rent as well as house values while Burnell (1988) posited that crime rates in adjoining communities can have economic impacts on house values. In short, he concluded that crime affects house values and rents in the immediate community and house values in adjoining communities. Buck *et al.* (1991a, b, 1993) investigated the impact of atlantic city casinos and the associated increased crime on house prices in the three Southern Jersey counties. They found sizeable depressing effects of crime on house values. House prices in communities more accessible to atlantic city experienced more severe economic impacts. This in turn explains how high-crime areas serve to draw more offenders in further intensifying the negative economic impacts.

Conversely, Pope and Pope (2012) in a more rigorous analysis of the relationship between changes in crime techniques and property values indicated a negative relationship between crime changes and property value; changes are said to be statistically significant and economically large. However, they opined that using raw data to illustrate the relationship between changes in property values and changes in violent and property crime, it is difficult to establish a relationship between housing price change and changes in violent or property crime.

In a rhetoric question poised by Gibbons and Machin (2008) on whether house prices react strongly to local crime rates and whether it is laudable to use the information to value lower crime rate in the same way as we can value school quality, transport, accessibility and other local goods, they posited that only a few recent studies have attempted to provide answers although, according to them there are one or 2 very early investigations (Thaler, 1978; Hellman and Naroff, 1979; Cullen and Levitt, 1999; Gibbons, 2004; Tita *et al.*, 2006). They however, asserted that the challenges here are greater than in either school or transport contexts, since disentangling the influence of crime from other neighbourhood influences is difficult as they claim that crime recognises no boundaries that would support a geographical discontinuity design and data limitations have so far made analysis of link between changes in crime and changes in housing prices quite feasible. Gibbons and Machin (2008) reiterated that in the absence of research designs that the approach taken by

Gibbons (2004) is to eliminate unobserved neighbourhood attributes as far as possible using a non-parametric modeling approach coupled with instrumental variable techniques. Surprisingly perhaps, the results from Gibbon's study indicate that a high incidence of burglary has no effect on housing prices possibly because home buyers are not well informed of local burglary rates or can install effective security measures relatively cheaply.

Using empirical model and methods to measure the impact that property-based crimes in the neighbourhood have on the price of residential property have been described as an uphill task (Gibbons, 2004; Pope, 2008; Troy and Grove, 2008). This among others is so because the behavior of neighbours will depend on their individual characteristics and these may well be systematically related to unobserved determinants of property prices. Consequently, one may falsely infer a causal connection between local characteristics and property values when in fact it is the unobserved element of property values that pushes neighbourhood composition. For instance, low local land prices attract low-income residents and if low-income residents are prone to commit crimes in their neighbourhood one will find more crime in low land price neighbourhoods. Unless one can observe land prices, regression estimates of the impact of crime on property prices may be biased towards obtaining a contrary correlation.

Likewise, Cohen (1990) suggests that studies examining the impact of crime on housing prices might be overstating effects for the following reasons. One, neighbourhoods with high crime rate might also experience other conditions responsible for the reduction in house values such as air pollution or proximity to major highways or industrial land use since researchers do not control for these conditions, their analyses inflate estimates of how much crime lowers house values. Secondly, researchers also may overstate impacts because they fail to control for unreported crimes. Taking the reporting rate into account, the per crime impact of crime on house values decreases. The substance of the reduction depends on whether a total, property or violent crime index was used as the crime gauge. Cohen (2004) proceeded to revise per crime cost estimates from prior studies downward by as much as two-thirds. In his candid opinion, he concluded that crime does have strong influences on house values and that positive action should be taken on it but according to him it is unfortunate that the policy avenue for reducing crime impacts is not crystal clear. However, the results in this study lend support to this theory by documenting the

relationship between crime and housing values. Thus, this research supports the view that policy makers and city officials concerned with urban growth should make crime prevention an important priority.

Literature review

Nature of residential neighbourhood crime: The problem of crime has become a standard component in the discussion of urban issues and the control of crime is now as much an urban policy issue as is inadequate housing and poverty (Naroff *et al.*, 1980). It is essentially and gradually manifesting that these problems are interrelated. Property crime, especially in homes is said to be badly affected.

The unlawful entry into other people's residential apartment for the purpose of committing a crime is referred to as 'residential burglary' (Moreto, 2010). Offences that constitute 'break and enter include forceful entry into someone's house probably with an intention to steal. For the purpose of this research, residential burglary is used to refer to both break and enter-dwelling and stealing from dwelling offences. The fact that homes are usually left vacant during the day accounts for the frequent burglary offending. Many urban dwellers especially the high income class are mostly victimized due to their massive acquisition of personal effects (valuables) and the fact that a large number of detached dwelling with many accessible entry points like doors and windows.

The cumulative effects of crime on the socio-economic reconstitution or concentration of particular groups within neighbourhoods, play out over decades. However, changing levels of crime are likely to induce more immediate responses at the individual level. Increases in crime will directly impact an individual's perception of safety in a neighbourhood. In turn as perceptions regarding the safety of one's own community deteriorate, urban residents often choose to move from impacted communities in search for a safer neighbourhood (Cullen and Levitt, 1999; Tita *et al.*, 2006). Primarily, crime and fear of crime lead to flight from the city to the suburbs. It leaves in its wake areas of concentrated poverty and racial/ethnic enclaves in the urban core (Jargowsky, 1996; Massey and Denton, 1993).

As housing markets serve as the arena in which the impact of crime first manifests itself, these markets can potentially serve as early indicators of neighbourhood decline. Therefore, a more complete examination of how crime affects local housing prices will ultimately lead to a better understanding of the larger issue pertaining to small crime impacts on residential stability (Schwartz *et al.*, 2003; Ihlanfeldt and Mayock, 2010).

MATERIALS AND METHODS

Housing characteristics/attributes: Olajide *et al.* (2013) defined real property as any personal belonging with a title which can be conveyed and re-conveyed at law with a distinguishing characteristic of immobility, like land and building. They went further to assert that residential property as any building that is primarily used as living accommodation. They went further to unveil that residential property is seldom called housing which can be further expressed in terms of density as low, medium and high; settlement as rural, semi-rural and urban; by design as tenement, flat, bungalow, duplex, manssionatte and the likes. In terms of residential property value (Mackmin, 2014) opined that the residential market is imperfect as he believes that there is no central market place as a result buyers and sellers are relatively uninformed and even their professional advisors, valuers and agents, only have a limited knowledge of what is available for sale and of what is happening in the market. He added that every house, flat, bungalow or other unit of residential accommodation is unique in some respect. Essential, studies show that the value of residential property can be influenced by a good number of factors (Table 1). Table 1 reveals that most studies either omit property crime as an influencing factor or at best put it under neighbourhood characteristic. Sequel to this and looking at the lethal effect of property crime on the property value, there is the need for additional studies by values in this respect.

A residential property as a heterogeneous good can be defined by a vector of characteristics or attributes of which its summation makes up either the rental or capital value. However, previous researchers had identified some housing characteristics that impact on their prices. The effort is made in Table 1 to identify some of them.

Modeling the impact of crime on property value: Pope and Pope (2012) affirm that hedonic pricing method has become an important tool used by economists and valuers to estimate household valuations for local amenities such as crime. This method, according to them attempts to argue that economic agents choose a place of residence by making informed trade-offs between housing characteristics and various amenities. According to Lizam basic modeling techniques for the hedonic method which is otherwise known as the implicit price approach originate from the regression technique which was first introduced in the research of court and was later adopted by Griliches. The basic assumption towards the hedonic price approach is formed through the hedonic hypothesis that "a commodity can be seen as a

Table 1: Housing characteristics/attributes

Researcher(s)	Title of article	List of attributes	Type of values
Babawale and Adewunmi (2011)	The impact of neighbourhood churches on house prices	Quality of building facilities, accessibility, neighbourhood quality	Rental
Kauko (2003)	Residential property value and locational externalities: on the complimentary and substitutability of approach	Accessibility factors, neighbourhood factors, specific negative externalities, public services, taxes and identity factors	Capital
McCluskey <i>et al.</i> (2000)	The application of surface generated interpolation models for the prediction of residential values	Date of sale, age of property, size, neighbourhood quality; building characteristics, group cluster	Capital
Hong (2011)	Neighbourhood preferences of house buyers: the case of klang valley, Malaysia	Neighbourhood type, structural attributes, locational attributes	Capital
Selim (2009)	Determinants of house prices in Turkey: Hedonic regression versus artificial neural network	Location, type of house, age of building building facilities, other structural characteristics	Capital
Megbolugbe (1989)	A hedonic index model: the housing market in jos, Nigeria	Structural traits like size, age roof cover and plumbing features of the building, neighbourhood traits like school, road, water and electricity quality; Locational traits (access to economic, social and political activities)	Rental and capital
Bello and Bello (2008)	Willingness to pay for better environmental services: evidence from the Nigerian real estate market	Internal factors like age, size of plot and building, condition of facilities. External factors like general economy, population, employment, immigration, finance, location, infrastructure, transport and neighbourhood	Rental and capital
Tse and Love (2000)	Measuring residential property values in hong kong	Structural, physical, neighbourhood and environmental attributes	Capital
Researcher's compilation (2015)			

bundle of attributes for which inherent prices can be derived from prices of assorted variants of the same commodity containing different levels of specific characteristics". Inferably, this assumption asserts that the price of heterogeneous goods can be observed as a function of their different characteristics. However, Rosen being the first researcher to formalize the theoretical foundation of the hedonic approach acknowledged that property is a heterogeneous product transacted with a bundle of characteristics that implicitly contribute to the price formation. To understand Rosen's hedonic method within the context of the property market, the individual property is described by specific qualities or characteristics and for each property these characteristics may differ slightly or significantly.

However, Dunse and Jones (1988) cautioned that not with standing the wide application of the method, conclusions must be tempered by the limitation of the model. Though, the use of the method over the years had enjoyed the benefit of versatility, efficiency in responding to information, possibility of the method to approximate the values based on the actual choices of the people and the fact that it is comparatively easier to obtain data on property sales and characteristics that can be easily linked to secondary data sources so as to acquire the descriptive variables for the 'impact-size' analysis; the method is not without some limitations. For instance, hedonic price model assumes that hedonic prices are the same across markets and property types that are not the case in reality; also the model only explains 60% of variation in price of which from valuation point of view, this level of accuracy

is unacceptable. To overcome these limitations a definite improvement on the "rules of thumb" is used by valuers to adjust comparable evidence before applying them to the subject property. Other limitations include: need for adequate knowledge, requirement for validity measurement, problem of multicollinearity, the availability and accessibility of data directly affect the amount of time and the additional cost that will be incurred to carry out an application of the model and the fact that the model is relatively complex to interpret as it requires a high level of statistical knowledge and expertise.

RESULTS AND DISCUSSION

This study reviewed 40 published articles on property crime in which researchers specifically looked in to the impact of crime on housing prices/values. The articles are classified by recency of publication, researcher's academic/professional specialisation, method of analytical tool, type of data, country of publication, type of crime considered and the degree of the impact.

Taking the above classification into consideration, the analysis of the literature reveals that 8 out of the 40 published articles under consideration were published between 2010 and early 20015 while the remaining Articles 32 were before 2010. This represents 20% against 80%. This result calls for more publication in this regard taking into consideration the negative effects of property crime (Gibbons, 2004; Taylor, 1995; Tita *et al.*, 2006).

Table 2: Empirical studies on the impact of neighbourhood crime on property values

Objectives	Methodology	Country	Result(s)	Researcher(s)/year
To examine the link between crime and property values by exploiting the dramatic, nationwide decrease in crime the occurred in 1990s	Hedonic pricing model	USA	The result indicated that negative relationship between crime changes and property value change were substantially significant and economically large	Pope and Pope (2012)
To determine the impact of crime on apartment prices	Hedonic pricing model	Sweden	Apartment prices in a specific areas are strongly affected by crime needless of the crime type When offences were broken down by types, residential burglary, theft, vandalism, assault and robbery, individually had a significant negative effect on property values	Ceccato and Whilhelmsson
To determine the effect of fear of crime on housing prices	Hedonic pricing model	USA	Fear of crime is capable of adding to the household's budget thereby reducing returns on property investment	Pope (2008)
To determine whether crime rate mediates how parks are valued by the housing market	Hedonic analysis	Baltimore, USA	All results indicate that park proximity is positively valued by the housing market where the combined robbery or rape rate for a neighbourhood	Troy and Grove (2008)
To quantify the intangible cost of crime with reference to residential neighbourhood	Hedonic pricing model	USA	Average impacts of crime rates on housing prices could be misleading because different crime rate and degree determine the gravity if the effect on property values	Tita <i>et al.</i> (2006)
To measure the effect that property-based crimes in neighbourhood have on the price	Hedonic pricing model	USA	Confirmation that property-based crimes in a neighbourhood could lead to economic loss in housing investment	Gibbon (2004)
To estimate the impact of crime on house prices	Hedonic pricing model	Florida, USA	The cost of crime has virtually no impact on house prices overall but that homes were highly discounted in high crime areas	Lynch and Rasmussen (2001)
To examine the impact and changing crime levels on changes in relative housing value and vacancy rates	Ordinary lease square regressions	Baltimore, USA	Different crimes influence different aspects of the housing market. Past and changing crime rates play roles in ecological transition in neighbourhood	Taylor (1995)
To examine the nexus of economic development induced crime and property values focused on casino gambling introduced to Atlanta City	Econometric technique	New Jersey, USA	The consistent rise in offences will negatively affect return from property investment. The gain in property taxes that a municipality may realize when a reduction in its property crime rate imbalances assessed values	Buck and Hakim (1989)
To examine the impact of urban crime on urban public sector in the area of changes in the demand of housing and property within urban area caused by variations in crime rates	Regression	Boston, USA	Crime is capable of affecting housing investment in the sense that property tax remains one of the key sources of income for government	Naroff <i>et al.</i> (1980)
Researcher's compilation				

In the aspect of researcher's profession, only eleven representing 16.4% of the total sixty seven researchers were in the real estate and facilities management. Others making up 83.6% belong to other professions like criminology, economics, town and regional planning. It is our belief that realtors should be more involved. Concerning the method of analysis used, 31 studies representing 77.5% adopted hedonic price modeling. The majority of other writers used simple regression analysis. This reveals that hedonic, notwithstanding its shortcomings is still the widely used method of analysis. To this end, effort must be intensified to neutralize the criticisms against the hedonic regression towards better result (Dunse and Jones, 1998; Pope and Pope, 2012; Palmquist, 2005). As touching the country of publication a cursory examination of the articles under consideration reveals that 34 of the reviewed articles representing 85%

of the total articles either domicile or center on developed nations, hence the remaining 6 Articles representing 15% emanated from emerging and developing nation. This implies that more research on the impact of crime on housing price/value needs to be conducted in the emerging and developing nation especially that property crime is rampant and response to crime prevention is still very low in these nations.

Furthermore analysis on the degree of impact of crime on housing price reveals that 7 studies representing 17.5% resulted in insignificant impact, 3 studies representing 7.5% resulted in low or selective impact while 30 studies representing 75% resulted in significant impact. The implication of this is that in the practical sense, crime is detrimental to housing value, hence the need for drastic action(s) to be taken. From Table 2, it can be deduced as follows.

Despite the devastating consequences of neighbourhood crime on property values which are common in the developing countries not much is done in the area of research at least for the reason of mitigation; as it can be seen that most of the researches were conducted in the developed economies. Most of the researches conducted were based on secondary data which is made possible from effective maintenance of data bank. This is indeed a lesson or challenge to the developing economies. Due to the fact that property crimes have degree and types that is residential burglary, theft, vandalism, assault, robbery and other violent crime like murder there is need to make clarification in this respect in order to come out with reliable findings. Hedonic pricing model was seen as the popular analytical tool for assessing the effects notwithstanding its well pronounced deficiencies; hence effort must always be made for reasonable adjustment and adequate caution in order to achieve quality results. The review also shows that the effect of neighbourhood crime on the property values have a multiplier effect on government revenue which may translate to low Gross Domestic Product (GDP), low return to the developer as well as the real estate manager. There also tends to be dwindling in effort to research on the subject matter in the recent year while the menace is seen to be soaring.

CONCLUSION

Studies have shown that residents are negatively impacted financially when crime suppresses local housing prices, thereby stunting an important mechanism for the accumulation of wealth. Many countries have even rolled out policies that encourage home ownership (Megbolugbe and Linneman, 1993; Dietz and Haurin, 2003). However, while home ownership is often viewed as a way to help enable households to build wealth, the threat to the value of that investment may limit this appeal. One of such threat is crime which may reduce the desirability of ownership in affected neighbourhoods. Thus, an examination of housing price serves as an ideal measure to the impact of changes in crime on neighbourhood desirability. Hence, this research has built on existing housing literature within the fields of urban housing studies by examining the prominence of crime as a determining factor in residential property pricing.

Sequel to the above, the review has discovered some salient facts as touching the relationship between crime and housing prices/value. First, considering the determinants of housing price most of the researchers either omit property crime completely or at best lump it with neighbourhood quality. This is considered grossly

inadequate when critically viewing the negative impact of crime on housing values. Also, the review has exposed the fact that there is paucity in the publication on this subject especially among the realtors who are supposed to be the most well-informed and concerned. The negative effect of crime on property value is capable of detrimentally affect the real estate practice as well as reducing the income from residential property investment as well as that of the realtor. In addition, the review reveals that remarkable research or study has not been done in this regard in the emerging and developing nations that had been found to be at the receiving end of property and even violent crimes. The reason for this could be as a result of the fact that most articles, especially in the developing nations, are not uploaded to the web.

RECOMMENDATIONS

It is the recommendation of the researcher that researchers especially realtors must rise to carry out more rigorous studies on the impact of crime on housing prices. Government and its agencies are persuaded to sponsor researches in this direction as this will boost the income generating capacity of government through property tax as well as promoting sustainable housing geared towards healthy living.

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