



# Social housing, neighborhood quality and student performance



Felix Weinhardt\*

Humboldt University Berlin and Germany Institute for Economic Research (DIW), Berlin, Germany

Centre for Economic Performance (CEE, CEP) and Spatial Economics Research Centre (SERC) at the London School of Economics (LSE), London, UK  
IZA, Bonn, Germany

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## ABSTRACT

Children who grow up in deprived neighborhoods underperform at school and later in life but whether there is a causal link remains contested. This study estimates the short-term effect of very deprived neighborhoods, characterized by a high density of social housing, on the educational attainment of fourteen years old students in England. To identify the causal impact, this study exploits the timing of moving into these neighborhoods. I argue that the timing can be taken as exogenous because of long waiting lists for social housing in high-demand areas. Using this approach, I find no evidence for negative short-term effects on teenage test scores.

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## 1. Introduction

Children who grow up in deprived neighborhoods underperform at school and later in life. In England, the most deprived neighborhoods have high concentrations of social housing (public housing) and are characterized by very high unemployment and extremely low qualification rates, high building density, overcrowding and low house prices. Growing up in social housing is associated with unfavorable outcomes: adults who lived in social housing during their childhood are more likely to be depressed, unemployed, cigarette smokers, obese, and have lower qualification levels compared to peers in their cohort who never lived in social housing (Lupton et al., 2009). The following concern arises: if living in a bad neighborhood has direct negative effects on outcomes such as school results, this could in extreme cases constitute a locking-in of the disadvantaged into a spatial poverty trap: 'once you get into a bad neighborhood, you and your children won't get out'. This might be the case because of peer group and role model effects (Akerlof, 1997; Glaeser and Scheinkman, 2001), social networks (Granovetter, 1995; Calvo-Armengol and Jackson, 2004; Bayer et al., 2008; Zenou, 2008; Small, 2009; Figlio et al., 2011),

conformism (Bernheim, 1994; Fehr and Falk, 2002) or local resources such as school quality (Durlauf, 1996; Lupton, 2005).<sup>1</sup> In a society that believes that everyone deserves a fair chance, it is hence not surprising that this disadvantage associated to deprived neighborhoods has attracted attention from researchers and policymakers alike.<sup>2</sup>

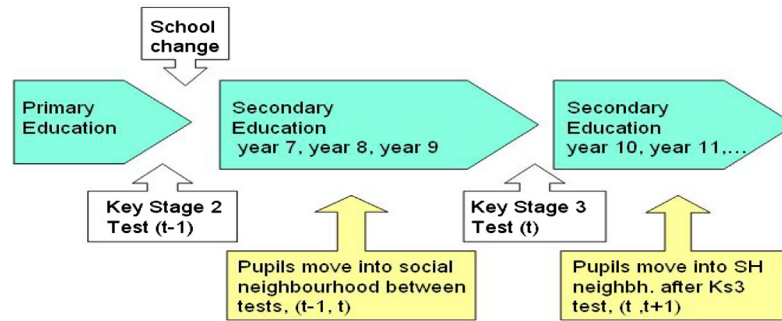
This paper establishes whether moving into localized high-density social housing neighborhoods causes deterioration in the school attainment of fourteen-year-old students during the first three years of secondary education (equivalent to 6th to 8th grade in the US). The English setting offers a unique opportunity to answer this research question for two reasons.

Firstly, the geographical sorting problem needs to be overcome, which otherwise induces spurious correlations between individual and neighbors' outcomes (Manski, 1993; Moffitt, 2001). In order to identify the causal impact of neighborhood deprivation on student attainment this study exploits the timing of moving into these neighborhoods around the national age-fourteen Key Stage 3 (KS3) exam. In England, the timing of a move can be taken as

<sup>1</sup> It is not the aim of this paper to distinguish between these theoretical channels.

<sup>2</sup> Housing policies that rest on the idea of a causal channel from the place of residence to individual outcomes are inclusionary zoning and desegregation policies, as well as regeneration and mixed-housing projects, such as 'Hope VI' in the US, or the 'mixed communities' initiative in England (e.g. Cheshire et al., 2008).

\* Address: Humboldt University Berlin, Spandauer Str. 1, 10178 Berlin, Germany.  
E-mail address: [felix.weinhardt@hu-berlin.de](mailto:felix.weinhardt@hu-berlin.de)



**Fig. 1.** The English school system and identification. Notes: The time when the KS3 exam, a national and externally marked test, is taken is denoted by  $t$ . We can now compare test score value added of students who move into deprived social housing neighborhoods before taking the KS3 test, in the period from  $t - 1$  to  $t$ , to students who also move into deprived social housing neighborhoods, but after sitting the KS3 exam in the period between  $t$  and  $t + 1$ . The latter group only received a 'placebo' treatment as the future neighborhood cannot affect test scores of the test taken at time  $t$  and thus serves as control group.

exogenous because of long waiting lists for social housing in high-demand areas. In these areas, waiting times can exceed ten years, and I argue that we can therefore compare test scores of students who experience large deteriorations in neighborhood quality before the exam, to test scores of other students who will be subjected to the same neighborhood treatment in the future (Fig. 1). Naturally, a student's result in the KS3 exam can only be influenced by the low quality of her new neighborhood if she moves into this neighborhood before taking the test. Later movers only receive a (future) 'placebo' treatment and serve as natural control group as they are likely to share many unobserved characteristics common to social tenants.<sup>3</sup> We know that students from deprived family backgrounds are prioritized, but identification only relies on them being prioritized in a similar way before and after the KS3 test. This means that we can relax the usual assumption that social housing neighborhood allocation is quasi-random as such (e.g. Oreopoulos, 2003). Time-invariant preferences or unobserved institutional arrangements that could give rise to neighborhood sorting can be captured by the neighborhood fixed effect. The remaining assumption required for identification is that allocation and individual sorting preferences for particular neighborhoods do not change over the study period. In support of this assumption, I show that a rich set of individual characteristics including earlier age-7 and age-11 test scores fail to predict the time of the move. I interpret this as direct evidence in favor of the validity of the identification assumption of quasi-random timing.

Secondly, nation-wide census data makes it possible to track individual residential mobility for four cohorts of students in England; the study is therefore not limited to a small number of neighborhoods or of cities. I use the Census 2001 Output Areas (OA) to define a neighborhood, which are small geographical units of 125 households on average.<sup>4</sup> The average OA contains about 4.5 same-age students, who on average attend 2.5 different schools. The fact that there exists no direct linkage between residential location and secondary school choice in England allows the simultaneous inclusion of school and neighborhood fixed effects. The richness of the data also allows including controls for a potential direct effect of moving, earlier attainment and family background.

The main finding of this study is that early movers into deprived social housing neighborhoods experience no negative short-term effects on their school attainment relative to late movers. While it is demonstrated that there are large negative associations

between moving into deprived areas and school outcomes, these negative correlations cease to exist once controlling for group-specific observable and unobservable characteristics in a difference-in-difference framework. In the most demanding specification, the estimate for the neighborhood effect on teenage test scores is *positive* and insignificant. At the five per cent significance level, these estimates allow us to reject negative effects larger than 1.2 per cent of a standard deviation in teenage test scores, coming from large deteriorations in neighborhood quality such as a one standard deviation increase in local unemployment rates and share of lone parents with dependent children. I therefore conclude that these results are sufficiently precise to provide strong evidence against negative short-term effects from moving into deprived high-density social housing neighborhoods during the formative teenage years.

To the best of the author's knowledge, exploiting the timing of moving when waiting lists are long is a novel strategy to study neighborhood effects.<sup>5</sup> Besides this methodological innovation, the finding of no negative effects on school outcomes from moving into high-density social housing projects informs the literature, where similar conclusions have been reached with lower precision in the estimates.

The rest of the paper is structured as follows: The next section briefly described related literature. Section 3 outlines in detail the empirical strategy of this paper. Section 4 describes the institutional setting and Section 5 the data. Section 6 discusses the results and Section 7 presents a battery of robustness checks before I summarize and conclude.

## 2. A very short review of the related literature

For educational outcomes the only existing and credible experimental study, the Moving to Opportunity (MTO) intervention, a mobility voucher scheme, finds little evidence for neighborhood effects in both the short and the long-run (Katz et al., 2001; Sanbonmatsu et al., 2006; Kling et al., 2007; Ludwig et al., 2012, 2013).<sup>6</sup> In contrast, the non-experimental literature tends to find evidence in favor of neighborhood effects on educational outcomes.

<sup>3</sup> This strategy is related to Rothstein (2010) who studies effects of teacher quality and exploits the fact that future teachers cannot affect contemporaneous value added test scores.

<sup>4</sup> For comparison: OAs are smaller compared to US Census Tracts or Block Groups and more comparable to Census Blocks, though these are even smaller than OAs on average and have larger variation in size.

<sup>5</sup> Existing research used instrumental variables (Cutler and Glaeser, 1997; Goux and Maurin, 2007); aggregation (Card and Rothstein, 2007); institutional settings (Gibbons, 2002; Oreopoulos, 2003; Jacob, 2004; Gould et al., 2004; Gurmur et al., 2008; Goux and Maurin, 2007); fixed effects (Aaronson, 1998; Bayer et al., 2008; Gibbons et al., 2013) or experimental setups (Katz et al., 2001; Kling et al., 2007; Sanbonmatsu et al., 2006; Ludwig et al., 2012, 2013).

<sup>6</sup> The MTO has been questioned by some because of its focus on relatively small neighborhood-level changes (i.e. small 'treatments') and limited geographical representativeness (Quigley and Raphael, 2008; Clampet-Lundquist and Massey, 2008; Small and Feldman, 2012).

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