Discussion Papers in Economics

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DP 05/23

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ISSN: 1749-5075

Business Improvement Districts and Housing Markets: Evidence from Neighborhoods in London*

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April 15, 2023

Abstract

Business Improvement Districts (BIDs) represent an important place-management tool across the UK, investing more than 100 million pounds each year into street safety and other public goods provision for their local neighborhoods. This paper studies the effects of the opening of a BID on local housing markets in London, where the first BIDs started operating in 2004 and more than 20% of the active BIDs in the country are located. We show that BID openings lead to an increase in house prices by around 3%, using property transaction data and BID-level information. We record also an increase the share of new-building sales after the BID opening. We argue that these results are driven by demand effects from neighborhood improvements, since they seem to be driven by BIDs spending more on crime and environment. We rule out housing supply responses to BID openings using administrative records on housing planning applications. In the longer run, blocks exposed to BIDs activity present gentrification trajectories as they lower their share of social renters, BAME and unemployed residents to a greater extent compared to non-affected blocks.

Keywords: Urban regeneration, Private government, Neighborhood amenities, Housing Market

JEL classification: H70, R28, R30.

*The usual disclaimer applies.

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1 Introduction

Over the last decades, Business Improvement Districts (BIDs) have become an important alternative provider of public goods in the UK. A BID is a business-led entity in the form of a collective action association investing in the quality of a certain area, with 5-year long operating mandates. According to Cotterill et al. (2021), there were 303 BIDs operating in 2018 in the UK, spending over £100 million of levy income annually on initiatives to improve the locales for which they are responsible. These activities range from ensuring additional security and cleaning services to greening initiatives or even recreational events. These services go above and beyond the ones already provided through public spending and are funded through a levy based on the rateable value of properties, paid by the business (or commercial property) owners, that operate within the geographical boundaries of the BID.

Our research aims at identifying the impact of BID openings on local housing markets and informing on the residential sorting processes in the longer run after BIDs formation since their introduction in 2004, with the use of residential property transaction data, administrative records of housing planning applications and Census data from blocks in the Greater London Area.

One interesting characteristic of BIDs for economists is their role, resembling a "private government" in the provision of services within a certain perimeter. In theory, the welfare effects of such institutions are ambiguous for members (fee payers), whereas they are predicted be positive for non-members (Helsley and Strange, 1998). Regarding the first prediction, some existing work has tried to estimate welfare effects for members of place-management institutions such as homeowners association, documenting a certain level of appreciation for properties within their boundaries (Meltzer and Cheung, 2014; Clarke and Freedman, 2019). Instead, we provide empirical support towards the latter theoretical implication by exploiting the institutional membership and design of BIDs. The opening and geographical coverage of the BIDs do not depend on residents and need *exclusively* the approval of the majority of business owners within the designed BID area through a public ballot. Any effects on residential property market following the opening of a BID would highlight an externality that residents in these areas experience, since homeowners do not need to pay any fee for membership (non-members). Also, differently from homeowners associations, BIDs do not have any influence on land use regulation within their boundaries - hence, one might assume

that these effects are due to their local investments towards neighborhood quality improvement. Therefore, this paper provides an approximate estimate of the externality of BID formation in terms of property prices. Moreover, some of the BID openings overlapped with the 2008 recession - which brought a period of austerity for public spending, particularly on police budget.[1] Hence, the case of BIDs within London metropolitan area represents a fitting scenario to analyse the effects of private provision of services in a period of public spending reductions.

To a certain extent, our paper also speaks to the literature on the house price capitalization of local (dis-)amenities like crime and street quality since, typically, these collective agreements involve "high street" businesses, located within town center areas, where safety and security conditions, as well as environmental quality are reportedly residents' least favourite neighbourhood aspects, especially in the UK (Thomas et al., 2015). In many empirical exercises, neighborhood crime and crime risk have been consistently found to have a negative effect on residential property value.[2] House values have also been shown to be sensitive to investments into urban green spaces (Voicu and Been, 2008) and street cleaning initiatives (Nepal et al., 2020), although evidence on these margins from causal frameworks is generally limited.

At the time of writing this paper, research on BIDs is still scarce with few papers assessing the externalities that BIDs entail for their communities. Brooks (2008) studied the effect of BIDs on crime, using neighborhood-level reported crimes in Los Angeles. BIDs led to a decrease between 6 and 10% in total crime, with a more notable decrease occurring in serious crimes. More recently, Faggio (2022) also analyzed the effects of BIDs on crime, using data from 2012 to 2017, for England and Wales. BID formation is associated with a drop by circa 10 crimes per quarter (around 2%), with stronger effects for shoplifting, anti-social behaviour and public order-related crimes. While there is a negative total effect on crime, criminal activity seems to divert to commercial areas between one and two kilometers far from the BID. However, crime reductions are quite a mechanical outcome when BIDs start operating, and it is quite complex to reach any measurable

[1] As documented by Facchetti (2022), the underprovision of policing in London harmed citizens' welfare, with a decrease in house prices concentrated in high-crime areas.

[2] The cost of crime in terms of property prices has been estimated in different ways across a number of contexts. Bowes and Ihlanfeldt (2001) find a 3–5.7% decrease in property prices for one additional crime per acre in Atlanta (US). Lynch and Rasmussen (2001) find a 4% decrease in property prices for a one-standard-deviation increase in violent crimes (Jacksonville, US). Other US-based papers show that even the presence of a registered offender into a house close by reduces property prices by at least 2% (Pope, 2008; Linden and Rockoff, 2008; Wentland et al., 2014). Gibbons (2004) and Braakmann (2017)'s results show a decrease in property prices for an increase in cases of criminal damage to property, violent crimes and anti-social behavior in London as well as the rest of England and Wales.

economic implication of such reductions. The only results on property prices are reported by Ellen et al. (2007), who analyzed the impact of BIDs in New York City. They found a positive long-lasting effect on commercial properties value (almost 16 percent), especially in areas with more office spaces, while residential properties value increased during the BID creation process up to 28 percent, but fell once they actually formed.

Our setting allows us to leverage neighborhood-level variation in BID boundaries to identify the causal effect of these place-management associations on the local residential property markets in London, for which we construct a 2-decade long, geocoded dataset comprising both property transactions and housing planning applications filed to local authorities. The fine-grained geographical information on transactions and BID boundaries makes us able to set up a difference-in-difference strategy where we confront transactions in postcode units that fall within a BID to ones being relatively close to its borders. By collecting further information on BIDs budget plans, we investigate whether the levy rate, financial capability and level of expenditure on neighborhood amenities matter for property appreciation. We also provide novel evidence on possible long-run effects of BID openings at the block-level, by examining the relationship between census-recorded variables trajectories for the sociodemographic composition of the neighborhood and the level of exposure of the neighborhood to a BID.[3]

Our estimation strategy reveals a 5-year residential property price premium by around 3 percent from transactions of terraced houses and flats occurring in postcode units within BIDs. The effects seem to be larger on terraced houses, for which they surpass 4 percent, while flats tend to have a lower and noisier estimate of 2 percent, these translate in a premium within the range £8,000-26,000 (in 2010 terms) . BID openings also appear increasing the chances of sale for new-building properties by 4 to 9 percentage points (depending on the granularity of the neighborhood fixed effects in the model), which means up to 40 percent over the baseline likelihood, where the estimates are mostly driven by the sample of flats. These estimated differentials are slightly stronger when looking at a longer horizon, although mechanisms of residential sorting might become more evident the further in time from the BID opening. While we acknowledge that BID postcode units do have a significantly higher number of residential properties proposed through planning applications

[3]The level of aggregation of these variables depends on the UK census geography. We refer here at the block group level (or Output Area, OA) - more clarifications on these reporting geographies will be given in Section 3.

in the pre-BID period, the differential is by less than one new dwelling per postcode unit, and, importantly, we rule out any divergence in housing supply trends across BID and non-BID areas.

Exploiting variation by levy rate, annual budget and budget shares, we document that property prices increases are driven by BIDs where businesses commit to pay a higher surtax, the annual budget is higher and there is a greater relative spending on crime and environment. The pattern seems to be replicated when estimating the effects on the share of new-building property sales.

We also show that neighborhoods highly exposed to BIDs (in terms of share of postcode units within their boundaries) exhibit gentrification dynamics from 2001 to 2021, for which they reduce their tenure type mix (social renters share decrease) and unemployment rate, as well as ethnic diversity, compared to non-exposed blocks. Therefore, we produce evidence on the response of housing demand to a positive neighborhood externality in the short/medium term but also provide correlational evidence in the longer run, when residential sorting behavior results in starker differences in neighborhood composition - similar to the experienced patterns of gentrification of US cities (Baum-Snow and Hartley, 2020).

The remainder of the paper is structured as follows: Section 2 provides an overview of BIDs in the UK, Section 3 describes the dataset we build, Section 4 outlines the identification strategy, Section 5 reports and discusses the main findings and Section 6 concludes with final remarks.

2 Business Improvement Districts in the UK: an overview

The first Business Improvement District was established in 1970 in Toronto (Ellen et al., 2007), but such type of institution has only been introduced in the United Kingdom in 2004. Since then, BIDs have become an important tool for collective action among businesses, as they are thought as a way to revert the decadence of the high street and revitalize downtown areas (Glaeser and Kahn, 2004; Brooks and Strange, 2011). While there is no rigorous definition for a BID, they generally consist of a partnership of occupiers (or owners) of commercial property within their local authority, with powers to decide on a compulsory surtax, ring-fenced to pay for additional services and improvements in their locality (de Magalhães, 2014).

Their operations can include maintenance, development and marketing/promotion of the area to improve its attractiveness, funded with private capital from relevant commercial property/business

owners collective contributions. The formation of a BID is first proposed to local businesses to gather their opinions, then a vote on whether to establish the BID follows. For it be approved, it requires a simple majority of positive votes both in terms of the total number of votes casted and of the rateable value of the votes casted, meaning that the businesses that approve it must entail for at least 50% of the total value of the commercial properties within the BID. Assuming this vote is positive, a management structure comprising representatives of relevant stakeholder constituencies is created, and a strategy developed. The BID operates for a 5-year term, and its renewal is subject to another ballot. The individual business contribution happens typically in the form of a levy and the actual amounts vary considerably. This levy is calculated using a formula based on the rateable value, the number of liable days in a year and a BID levy multiplier set annually by the BID itself and is often yearly-adjusted for inflation.

Cotterill et al. (2021) suggest different categories for the hundreds of active BIDs that operate in the UK. BIDs can be divided into property-occupier and property-owners BIDs, depending on who pays the levies or area types. In the case of property-occupier BIDs, it is the business who occupies the property who pays for it, while in the latter it is paid by the owners of the commercial property. In the UK, the vast majority of BIDs are property-occupiers, with only 3 property-owners BIDs, which are located in London. Property-owners BIDs have around 4 times higher mean turnover. BIDs can also get classified with respect to the dominant use of the land. The most common cases are Town Centre BIDs, which cover the main commercial are of a town centre, Industrial BIDs, that are in a industrial estate or business park, and Commercial BIDs, which focus on areas of office spaces.

Across BIDs, high crime level is among the biggest concerns for business owners. In order to tackle crime, BID managers have resorted to various measures comprising the hiring of additional private security teams, increasing the coverage area of CCTV cameras and creating a coordinate approach with institutions such as the London Met Police. Moreover, improving air quality and creating a clean environment are others focal points of action. This is achieved, for example, by increasing the availability of recycling and street cleaning services and by supplying secure cycle parking.

Business support is also one of the key features of BID action, especially in Industrial ones. The support to the business community can happen through increased marketing and advertising of the

services and products available in the area, by creating periodic newsletters, interactive websites and expanding the outreach in social media, which allow people to find more easily the local businesses, by improving the links between the within-BID services and by lobbying for responses from institutions regarding relevant matters.

BIDs also attempt to provide cultural and recreational events, such as theatre plays, artwork displays, Christmas markets, movie screenings, wellbeing activity sessions and to engage with the local community, by building connections with local schools and channeling donations to charities.

3 Data

In order to identify the effects of BID formation on house prices and markets we would ideally require data that allows to link the geographical boundaries of the BIDs with the postcode units of the properties transacted, so to distinguish treatment and control groups. Hence, we construct a novel dataset that includes the area covered by each BIDs, their institutional and financial characteristics, transaction data for residential properties and the universe of planning applications in London from 2000 to 2019, both comprising their full postcode unit, and the coordinates of each postcode unit (and other information regarding its location). Lastly, we want to look at potential dynamics of neighborhood change using the three Census waves 2001, 2011 and 2021.

Postcode location. The information regarding the geographical coordinates of the centroid of each postcode unit, and administrative/census areas in which each postcode unit falls comes from the ONS National Postcode Directory. We geolocate each postcode unit, an area that contains approximately 15 addresses, to the boundaries of the nearest BID through ArcGIS.[4] This allows us to get the postcode units which fall inside the BIDs and the distance to the closest BID boundary for those that are outside.

We enrich the postcode-unit level dataset with information on the surrounding area that we use to construct additional covariates for our estimations. We start by mapping postcode units into Town Centre designated areas, provided by the Greater London Authority. We also calculate the distance from the closest relevant parks for each postcode unit, and create a count of historical

[4]Postcodes in the UK are 6/7-digit long and are structured as follows: the first two letters indicate the area (124 postcode areas in the UK); the first 3/4 digits are the district (approximately 20 districts per area); adding the following digit identifies the sector (around 3000 addresses in a sector); finally, the last 2 digits correspond to the unit.

buildings within a 250-meter catchment area using shapefiles obtained from MAGIC.[5] We also consider whether the property might be on the "riverside", hence a ring of 250 meters is drawn from River Thames, whose shapefile is provided by OS Open Rivers, and postcode units inside this area are assumed to have a river view.

Property transactions. The transaction data is obtained through the publicly available Price Paid dataset provided by the Land Registry. Every transaction records the date, price paid, unit type (detached, semi-detached, terraced, flats/maisonettes), age (newly built or established residential property), tenure type (leasehold or freehold), postcode unit and full address. We restrict these transactions to be the ones occurred between 2000 and 2019.

Housing planning applications. We also possess data from the London Development Database on all housing planning applications filed to the planning authorities – represented by the 33 Local Authorities – either approved or completed since 2000. Each application contains information on the permission, start and completion dates, exact location, the number of existing/proposed units by type (i.e., public or market-rate), the provider of existing/proposed units and the development type for the application. We use these permission-level information to construct two measures of housing supply in development at the postcode-unit level by focusing only on applications for new building erections: proposed units and net units.[6] The former is the count of housing units proposed across all applications for a certain postcode unit for each year, which would represent the supply of new housing in development; the latter measure also takes into account the demolished units from all the applications, hence it is the difference between proposed units and demolished ones (i.e., the net change to the housing stock).

Business Improvement Districts. The geographical coverage of each BID comes from a public available shapefile by the Greater London Authority, also containing information regarding their size (in square meters). We complement it with a survey of the public ballots and business plans to extract the years of activity of the BID, their levy and annual budget. Concretely, the years of activity were calculated using information publicly available on the first ballot ever taken for the

[5] We follow steps similar to Tang (2021) for the construction of a postcode unit-level dataset with information on proximity to parks and historical buildings. We only retain Grade 1 rated parks and historical buildings, which are measured by their historical and architectural significance. Source at: https://magic.defra.gov.uk.

[6] The London Development Database also includes applications on the existing housing stock for dwelling conversions, change of use of non-residential floorspace and building extensions. We exclude these from our analysis.

creation of the BID, while the levy and annual budget were taken from the most recent business plan set out by the BID management for the latest 5-year term. In the cases where the annual budget differs from year to year, the value reported is an average of the total budget over the 5-year mandate.

Currently, there are 69 active BIDs, 61 Town Centre and 8 Industrial, in Greater London, with most of them being created in 2005, 2007, 2013, 2014 and 2018 (Figure A1). Geographically, they are spread across several local authorities in the Greater London Area, however there is a high concentration in Central London (Figure 1). Figures A2, A3, A4 show the distribution of BIDs according to levy rates, annual budget and share of expenditure in crime and environment-related activities by distinguishing between those below and above-median levels. In terms of annual budget, the BIDs in the top 50% are those located in Central London, which is not surprising, as in fact 3 of them are even property-owned, and have on average a higher turnover. However, these BIDs are not necessarily the ones with the highest levy or expenditure in crime and environmental activities.

Table A1 provides some characteristics of the BIDs and the transactions that occur within their perimeters. There are some differences across BIDs in terms of levy rate and annual budget, with the highest annual budget reported of £8.2 million and around 226 times higher than the smallest. Regarding the number of postcode units and transactions, on average, these BIDs comprise 516 postcode units, with 1,233 transactions. The average share of transactions for flats in BID areas is 49%, while it is around 8% for terraced houses, which will be the only types of property of interest.

Neighborhood composition. Lastly, we collect information on socioeconomic characteristics, such as number of individuals by ethnicity and employment status, as well as by type of household tenure, through the Census waves of 2001, 2011 and 2021. Since the ONS Census reports data at different aggregations, i.e., blocks (Output Areas, OAs), block groups (Lower Layer Super Output Areas, LSOAs) and census tracts (Medium Layer Super Output Areas, MSOAs), we choose the maintain the most granular one (blocks) for our long-run neighborhood-level analysis of neighborhood compositional changes. We classify blocks in terms of share of their postcode units falling within a BID, by creating one indicator for blocks with a share of postcode units in a BID in the range 60-90% and one for blocks with more than 90% of postcode units being within a BID bound-

ary, respectively. In this way, we identify blocks that are above the median of exposure to BIDs in terms of postcode units share (60%) and the ones that are almost entirely into a BID ($\geq$ 90%).

4 Empirical Strategy

In the following sections, we report summary statistics on our sample of property transactions, and outline our difference-in-difference research design for the estimation of BIDs effects on property prices and sales.

4.1 Summary Statistics

We spatially join each postcode unit to the boundaries of the nearest BID, obtaining a variable with a distance equal to 0 for postcode units within a BID area, or to a positive value if otherwise. Therefore, postcode units are matched to a *unique* BID for which they are either in its control or in its treatment group. Subsequently, we merge postcode units with data on property transactions occurring in a 10-year window around the opening year of the BID, retaining transactions occurred only between 2000 and 2019. Finally, we include other postcode unit-level information on the area (Town Centre, parks, historical buildings, riverside).

Table B1 reports summary statistics for properties sold in postcode units outside BID boundaries - both at any distance and within 1 kilometer from the closest BID - and within a BID area, for the pre-opening baseline period. In panel (a), we show average values for variables of interest such as property prices and age (new vs pre-existing building). The group of properties sold within a BID presents higher average property price and chances of being a property in a new building. The starkest difference arises when comparing it with the group of properties sold at any distance from a BID in terms of average prices - the gap amounts to around 140 thousands pounds. However, restricting the control group to be within a ring of 1 kilometer radius, the difference sensibly reduces to (a statistically non-significant) 24 thousand pounds. The share of newbuild sales in both outside BID groups is around half the one for areas within BIDs. In panel (b), we look at other characteristics that might explain such initial differentials, like property-level (property type and contract type) as well as surrounding area features. Properties sold within BIDs tend to be flats or maisonettes (around 84%), and on a leasehold contract; while the two outer groups show

a much higher share of terraced houses (30-40%). Slightly less than 30% of transactions within a BID happen in a Town Centre area - while the corresponding fraction of sales occurring within 1 kilometer from the nearest BID is only 5% (3% for the group of sales at any distance). The postcode units where within-BID transactions occur are also closer to parks (by almost one quarter) and have a higher number of historical buildings within 250 metres. Generally small fractions of sales are on the riverside across the three groups (2.2-4.6%).

4.2 Estimation

4.2.1 Property price and newbuild sales

The main empirical challenge is the identification of a plausible control group that offers the counterfactual trajectory of property sales in absence of the creation of the BID. Since business/commercial property owners may decide to partner up to invest in a BID only in the most profitable areas, the exposure to the BID is not randomly assigned. One ideal experiment would be to compare price dynamics between areas where the business ballot outcome was just above the approval threshold and the ones where it was just below. However, there is no information on BIDs that failed to start (and by how much) as of the present day, hence we need to address the concern of endogeneity of BID formation.

We exploit geographical variation in BID exposure of postcode units, in the same neighborhood, to set up a difference-in-difference design that compares transactions in postcode units within a BID with those occurring in an outer ring of 1 kilometer. Crucially, the validity of this difference-in-differences approach does not require areas in the treatment and control group to be comparable in baseline outcome levels, but rather in evolution trends (parallel trends assumption). If that is the case, the difference-in-differences term returns an unbiased estimate of the average treatment effect (Abadie, 2005). Hence, this strategy assumes that property transactions in terms of prices and share of newbuilds present similar trends across groups before the opening of a BID.

A visual inspection of the *unconditional* trends in Figure B1 does not suggest divergent pre-treatment evolutions in the composite sample of terraced houses and flats for (log) prices and share of new-building property sales (panel (a)). The subsample of terraced houses (panel (b)) shows that the control was progressively converging towards the treatment group in terms of prices before

the BID opening, while newbuild sales in the treatment group followed a quite erratic behaviour. In the subsample of flats (panel (c)), the trends do not seem different up to the BID opening year for both outcomes. We also provide an empirical parallel trends test by estimating whether there is a significant treatment effect prior to the opening of a BID starting at $t = -5$ up to $t = -1$ (i.e., up to the year before the BID formation), conditional on the set of covariates, year dummies and (varying definitions of) neighborhood fixed effect (Table B2 and B3). The F-tests of joint significance for the placebo treatment effects return all p-values above 0.05, thus corroborating the parallel trends assumption in our setting.[7]

Therefore, we estimate the average treatment effects on the outcome of interest Y (log of price or newbuild sale) for property i in neighborhood l as described in the following equation:

$$Y_{it,l} = \alpha_l + \beta \text{WithinBID}_i + \gamma \text{PostBID}_t + \delta(\text{WithinBID}_i * \text{PostBID}_t) + \mathbf{X}'_{it}\mathbf{\Phi} + \epsilon_{it,l}, \quad (1)$$

where WithinBID_i is a dummy indicating that the transacted property is in a treatment group postcode unit (i.e., within a BID area) and PostBID_t identifies the entire period since the opening of the BID. The neighborhood fixed effects are expressed by α_l - we present estimates for varying definitions of neighborhood, from the broadest (e.g., postcode sector and census tract) to the smallest (block). The vector $\mathbf{X}_{it}$ can include dummy variables for property type and contract, as well as postcode unit-level variables such as a dummy for Town Centre, distance from nearest Grade 1 park (in meters), number of Grade 1 historical buildings within 250 meters, and a dummy for Thames River view. Any time-varying shock is absorbed by year of transaction fixed effects. We cluster standard errors at the yearly census tract-year level.

Furthermore, we can retrieve dynamic treatment effects for up to 5 years after BID creation. In practice, we estimate the following difference-in-differences equation:

$$Y_{it,l} = \alpha_l + \beta \text{WithinBID}_i + \sum_{t=-P}^{T} \gamma_t \text{Time}_t + \sum_{t=-P}^{T} \delta_t(\text{WithinBID}_i * \text{Time}_t) + \mathbf{X}'_{it}\mathbf{\Phi} + \epsilon_{it,l}. \quad (2)$$

Differently from equation (1), Time_t's are dummies identifying calendar years since BID opening,

[7] The self-selective nature of BIDs might also present the features of the Ashenfelter's Dip (Ashenfelter, 1978; Ashenfelter and Card, 1985), in that the mean property prices of the areas subject to BID formation decline during the period just prior to the actual formation. However, the pre-treatment trends do not present a decline prior to BID formation.

which we construct from the transaction year and the BID starting year. Therefore, $t = 1$ if the property was sold during the first calendar year following BID opening year, $t = 2$ if sold during the second, and so on; analogously, $t = 0$ if the property was sold during the same year as BID opening, $t = -1$ if sold in the first calendar year before BID official opening, and so on. The coefficients $\{\delta_0, \ldots, \delta_T\}$ thus identify dynamic treatment effects.

While, on one hand, parallel trends ensure the absence of anticipation effects and spurious effects, on the other hand we cannot exclude the presence of spillovers of the BID opening on the surrounding, outer area which serves as the control group - i.e., a violation of the stable unit treatment value assumption (SUTVA) of Rubin (1980). This assumption requires that the opening of the BID does not have an effect that extends beyond its boundaries. If this assumption is violated here, and the BID formation impacts the local housing market in the surrounding blocks, this simply would introduce a downward bias into the treatment effect estimator.

Hence, focusing on the control group transactions, we use variation in proximity to the BID to define the comparison group in the same fashion as Blanco and Neri (2023). If spillovers do exist, distance should influence their intensity, and their presence unveiled by comparing housing units in an inner ring of a certain radius from a BID boundary to units in an outer ring surrounding that inner ring.[8] We create the interaction of event year dummies from/to the BID opening with multiple 100-meter wide rings up to 800 meters indicating the distance of each property postcode unit to the associated BID - these represent the set of "treated" rings $R = \{0-100, 100-200, ..., 700-800\}$. Transactions occurring between 800 meters and 1 kilometer are the reference group (control ring). The differentials in outcomes of interest are recovered through the following equation:

$$Y_{irt,l} = \alpha_l + \sum_{r \in R} \beta_r \text{Ring}_{ir} + \sum_{t=-P}^{T} \gamma_t \text{Time}_t + \sum_{t=-P}^{T} \sum_{r \in R} \delta_{rt} (\text{Ring}_{ir} * \text{Time}_t) + \mathbf{X}'_{it} \mathbf{\Phi} + \epsilon_{irt,l}, \qquad (3)$$

where δ_{rt} is the estimate of potential spillovers in each of the rings closer to a BID, with respect to the most outer ring (800m-1km). The absence of patterns of effects within the control group rings might provide suggestive evidence in favor of limited spatial spillovers of BID openings.

Our design also circumvents the presence of negative weights attached to some treated units

[8] This approach establishes that proximity to the BID is the only driver of treatment intensity, conditional on observed characteristics and neighborhood fixed effects. The furthest ring in the 1-kilometer control group of our empirical strategy should be sufficiently far away.

when averaging heterogeneous treatment effects in typical two-way fixed effects regressions, since we do not estimate forbidden comparisons between later-treated groups switching from untreated to treated against already-treated groups (Borusyak et al., 2022): we exclusively estimate differences in outcomes between treated areas and nearby never-treated areas.

4.2.2 Housing planning applications

It is useful to analyze housing supply mechanisms to understand whether the effects on price and newbuild sales might be driven by an increased interest in housing developments in BID areas. We aim at estimating whether housing planning applications, at the postcode unit-level, are sensitive to BID openings. Potentially, developers might have insights on the BID formation process and, anticipating their opening, apply for the erection of new residential buildings in BID areas. Additionally, BIDs activities might also make the neighborhood more attractive over time and attract new developments.

We test for these dynamics by casting equations (1) and (2) at the postcode unit-level:

$$\text{Units}_{pt,l} = \pi_l + \rho \text{WithinBID}_p + \sigma \text{PostBID}_t + \tau(\text{WithinBID}_p * \text{PostBID}_t) + \mathbf{Z}'_{pt}\mathbf{\Theta} + \varepsilon_{pt,l}, \quad (4)$$

$$\text{Units}_{pt,l} = \pi_l + \rho \text{WithinBID}_p + \sum_{t=-P}^{T} \sigma_t \text{Time}_t + \sum_{t=-P}^{T} \tau_t(\text{WithinBID}_p * \text{Time}_t) + \mathbf{Z}'_{pt}\mathbf{\Theta} + \varepsilon_{pt,l}, \quad (5)$$

where Units_{pt} is a housing unit variable (either for proposed or net units) that we construct for new residential buildings applications at the postcode unit p for each year t from the administrative records of the London Development Database. The remaining parts of equations (4)-(5) are defined as for (1)-(2). The average treatment effect on number of proposed/net housing units in new residential buildings is summarized by the coefficient τ in equation (4). Thus, we estimate dynamic treatment effects and anticipation effects with the coefficients $\{\tau_0, \ldots, \tau_T\}$ and $\{\tau_{-P}, \ldots, \tau_{-1}\}$ in equation (5), respectively.

4.2.3 Neighborhood composition

Since BIDs invest in local amenities, we can interpret such investments as exogenous shocks to the quality of the neighborhoods. These quality improvements, potentially signalled by higher property

prices, might induce residential sorting and longer-run neighborhood compositional changes, i.e. a housing demand shock thereby generating a gentrification process à la Guerrieri et al. (2013). This process of gentrification is much in line with other empirical work on housing market spillovers, neighborhood quality and household location choices within a city (Glaeser et al., 2001; Bayer et al., 2007; Rossi-Hansberg et al., 2010).

To probe for gentrification dynamics, we look at the evolution of block-level sociodemographic variables across the three Census waves 2001-2011-2021 across different groups of blocks. We focus on three groups based on an indicator of exposure to BID, constructed from the share of the postcode units within the block that fall in any BID perimeter. The first one is a "No BID" group, which composes around 95% of the blocks in our sample.[9] The other two groups have a tendentially high exposure to BIDs, where one comprises blocks where 60% to 90% of the postcode units lie within a BID boundaries, and the other includes blocks with more than 90% of the postcode units being in a BID. The ones with nonzero exposure, up to (non including) 60% are left out of our analysis.

Our outcomes of interest range from tenure type (social renters) to employment and ethnicity. With a separate regression for each group, we assess whether blocks with some considerable exposure to BIDs present different trends compared to the blocks where no postcode was ever found to be in a BID area - once we account for unobserved heterogeneity across blocks with blocks fixed effects. These estimates are far from being causal, but would reflect a tendency for the neighborhoods (entirely or to a great extent) within BIDs to gentrify.

5 The Effects of Business Improvement Districts

The opening of a BID leads to significantly higher prices and newer properties within the transactions occurred in its boundaries, with no impact on surrounding areas. We document that effects are mostly due to BIDs' expenditure on crime and environmental factors. Importantly, the effects on share of new-building property sales are not driving the price premia estimates, but rather reflecting a baseline higher tendency to receive new building units; moreover housing supply does not change after a BID opening.

[9] About 3 thousand census blocks in London have undergone changes starting from Census 2011. Therefore, we restrict our attention to the 21 thousand blocks that remained constant over all census waves.

5.1 Property price and newbuild sales

We observe that the price effect estimates based on the sample of properties transacted (terraced houses and flats, either combined or independently) are generally statistically significant and positive. In Table 1, we present estimates that summarize the effects with a pre-/post-treatment comparison, according to alternative definitions of neighborhood for the fixed-effects specification. In column (1), we report the results under a postcode sector fixed-effects model, which we change with census tract first, then block group and block in columns (2)-(4). Lastly, we specify a model where we adopt a more stringent definition of neighborhood by interacting each block with all the BIDs associated to its postcode units (as within the same block, postcode units might have been assigned to different BIDs) and creating a block-BID specific linear time trend - the results are shown in column (5). The effects range from 2.6% to 5% according to the fixed-effects specification for the composite sample (panel (a)). The results for terraced houses and flats only, respectively, are reported in in panel (b) and (c). The price increase oscillates between 3.5% and 4.5% within the former type of dwelling, whereas flats experience around 2% of appreciation when using smaller areas for neighborhood fixed-effects.

Regarding the probability of a new-building property, Table 2 offers the corresponding estimates. We find overall positive impacts on the composite sample; while, expectedly, the market for newbuilt terraced houses does not seem too react to BIDs, and the market for new flats appears to increase following a BID opening. The estimates on the combined sample reflect the effects from flats transactions, with point estimates being dependent (even more) on the model specification. Broader neighborhood fixed-effects definitions such as postcode sector, census tract and block group present increases by more than 8 percentage points, these are instead reduced to around 5 percentage points when using block-level fixed-effects. The estimates for the terraced houses sample do not vary much across specifications, with an effect by around 1 percentage point, but only marginally significant at 10%.

We investigate the dynamic treatment effects for price and newbuild sales in Figure 3 for the composite sample (panel (a)) and by type (panel (b) and (c)), where we plot the coefficients according three different specifications: postcode sector FE, block group FE and block-BID-specific time trends. Two interesting features of this exercise are: unveiling whether there are anticipation

effects, and how long the market takes to capitalize any externality from BIDs establishment. Commonly across the three different estimation samples, there are no noticeably significant jumps before the opening year in neither outcome variable (price and newbuild sale indicator). The price effects also appear to take some years to build up, as the first significant estimate on the composite sample is only detected from the third year post-opening. There are signs of upward effects as soon as the second year for the terraced house subsample, while only towards the end of the first mandate we observe flats prices to go up. The plots for newbuild sale effects on the composite and flats-only sample depict a different story: as soon as the first year since the opening, there is already a positive spike in the likelihood of the transaction involving a new-building property. The estimates seem to stabilize around a 10 percentage point increase. In the terraced houses sample, the estimates do not go beyond 5 percentage points and tend to decrease after the third year, with quite large standard errors.

Thus, the effects seem to be fully incorporated into house prices when BIDs have been operating for almost the entirety of their first mandate - implying that improvements may take a while to be known to the market. The probability of a newbuild sale increases instead the year after the opening of the BID. These two findings, taken together, might suggest that there is a strong demand effect for properties within BIDs, but also that newer (supposedly better) housing is more commonly transacted in these areas after BID formation.

Robustness checks. Table B4 presents additional estimates from alternative regressions for both the property (log) price and the newbuild sale indicator in panel (a) and (b), respectively. We adopt the model with block-BID trends as the benchmark regression specification. The estimations are based on the composite sample of terraced houses and flats, if not stated otherwise. Column (1) reports the effects on either outcome from a sample where we trimmed extremely low and extremely high values of transactions (1st and 99th percentile). It generally confirms the positive treatment effects that were found on the full sample, although with a slight (nonsignificant) reduction in the point estimates. Another concern we address regards the number of transactions occurring in the same postcode units. We drop postcode units with too many (top percentile) or too few (bottom percentile) transactions over time, and repeat the analysis (column (2)). Yet, the estimates result positive and statistically significant. Since the opening of some BIDs overlapped with the

implementation of the London Congestion Charge (LCC), we want to provide reassurance on the absence of confounding from the positive impact on house prices of such event, which had similarly sized effects on property values (Tang, 2021). We enrich our specification with dummies for the areas within the London Congestion Charge Zone (comprising the short-lived Western Extension Zone), and interaction dummies with the post-opening period in column (3). We find that controlling for this additional event does not drive our main findings. In order to interpret these effects as an externality, it must be the case that membership fees to BIDs are not to paid by the residents - however, it can occur that residents living in a certain area are also local business owners, typically independent, small enterprises with few employees. Hence, in column (4) we provide estimates for Inner London-only boroughs (13), where the share of micro-businesses tends to be low (CEBR 2019).[10] The estimated effects are again in line with our findings for either outcome. Lastly, we produce results that also reassure against the concern that the effects on prices are mostly driven by newbuilt properties transactions. We run a model that controls for the new building properties too (column (5)) and obtain a significant price premium by 2%; additionally, we restrict the analysis on pre-existing terraced houses - since these should have the most stable supply across areas and periods - and yet find a significant price increase, which supports our hypothesis that neighborhood improvements via BIDs are capitalized into housing prices.

Furthermore, we assess whether the opening of a BID shifts the covariates distribution of the treated group properties relative to the control group (Table B5). There is no clear change in the differences between groups in terms of observed covariates but for distance to parks and riverside area. However, the changes are either trivial or only marginally significant.

Spillovers from proximity. We next show that our control group properties do not experience any impact from being close to a BID boundary. Figure 4 plots the event study results for rings within 500 meters of BIDs using the property (log) price and the newbuild indicator as outcomes of interest. In panel (a), we observe the treatment effects for the composite sample across the two dependent variables, and safely conclude that proximity to a BID does not map into a higher house price nor higher likelihood to have newbuild sales relative to the outer ring. For the subsample of

[10] Micro-businesses are firms with less than 10 employees. Out of 13 Inner London boroughs, more than 60% present a below-average share of micro-businesses and, at the same time, they are among the top ones in London for number of businesses (CEBR, 2019). Thus, it is very unlikely that business owners in Inner London coincide with (or represent a vast majority of) local residents.

terraced houses (panel (b)), there is only a positive differential in prices in the fourth year post-opening for some inner rings, but no overall positive trend; also the probability of newbuild sale does not seem to vary across rings, but for the fifth year, when the inner rings seem to be slightly less likely to have newbuild transactions. In panel (c), the dynamics for flats are similar to the composite sample ones (being flats the majority of transacted housing units), hence we dismiss any significant differences in outcomes evolutions within the control group rings by proximity to a BID. This exercise allows to us to infer that the BID effects on housing markets are extremely localized, which may reflects the fact that BID investments only affect the areas within their boundaries.

Expanded control group. In Appendix C, we repeat the property-level analysis using properties at any distance from the closest BID as an expanded control group. We show that the parallel trends assumption still holds overall, and results are mostly unaffected across the different specifications for either property prices and probability of a newbuild sale. Presumably, this would further alleviate concerns on spillovers determining our main findings, since spillovers would be diluted when considering the whole universe of properties transacted across the city.

Extended time horizon. For a look at results on property prices and probability of newbuild sale over a longer time period, we run our usual set of regressions by allowing for more than a 5-year post-opening period. We report our estimates in Appendix D. The estimated price effects are in the lower range 2.5-5.2% for flats and 5.6-7.1% for terraced houses, showing that the premia tend to become slightly higher in the longer run. The probability of newbuild sales still increases when extending the time horizon, but significantly only for flats and for the composite sample.

BIDs characteristics. We provide suggestive evidence on the relationship between our outcomes of interest and exposure to BID with different financial resources and investment targets. Specifically, we assess how effects vary across different groups of BIDs by levy rate, annual budget and budget share devoted to crime and environment-related activities. In Table 3, we report the estimates by subgroups of BIDs, classified into the bottom 50% and top 50% for each of the aforementioned measures. In panel (a), we observe that the highest (and significant) effects on house prices are detected among the top groups under annual budget and share on crime and environment, while the effects are not significantly different according to levy rates. Similarly, the effects on newbuild sales (panel (b)) do not seem to vary across groups according to levy rates

but for budget shares on crime and environment. Exploiting variation in these measures across BIDs helps profiling what local markets might need as financial commitment, expenditure levels and investment target to be susceptible to the intervention of such entities.

5.2 Housing planning applications

With the information provided in the London Development Database for each planning application, we construct an annual measure by postcode unit of how many new housing units are proposed and the expected change in housing, given the existing stock, i.e. net housing units. There might be two important mechanisms to understand from analysing such measures: whether there is any evidence of anticipation from building developers on the opening of a BID in a certain area, and if there is any change in housing supply from planning applications filed since the start of the BID.

In Figure 5, we provide the dynamic treatment effects as estimated from a difference-in-differences equation with postcode-level covariates, year dummies and different fixed-effects specifications, where we compare treated postcode units with control postcodes. The results are displayed for both measures of housing units in the planning applications.

Overall, we do not observe any significant effect or patterns, hinting at a quite stable supply of housing across these areas.[11] One reason behind these null effects could be that, given our sample consisting of downtown and immediately surrounding postcode units, housing supply might be quite constrained and it is unlikely to experience sudden expansions. When summarizing the effects over the 5-year treatment period (Table 4), we are yet unable to recover statistically significant effects across these two measures. However, we point out that it might be the case that postcode units in the treated group have higher number of proposed and net units at baseline - which would also reconcile with our findings on the higher share of new flats into the local markets (given that new housing takes some years from approval to completion). These findings tend to rule out any supply-side effects of BIDs behind the estimated house price premia, but rather hint at an actual demand-side push through any improvements in the neighborhood achieved via their investments and a greater liking for newer dwellings in such areas.

[11] These findings need not to be interpreted as evidence of no new housing supplied (or rather, expected to be supplied) but of no significant systematic change in new housing supplied in within-BID areas compared to external ones.

5.3 Neighborhood composition

We run separate regressions of block-level outcomes on Census year dummies to retrieve the trajectory for each of the groups previously defined - no BID exposure, 60-90% exposure and 90+% exposure - and plot the estimates in Figure 6. The evolution of outcomes in panel (a) indicates that blocks with some exposure to BIDs have reduced the share of social renters more than blocks without any BID postcode unit. An interesting pattern arises when analysing unemployment share changes (panel (b)), since this went up by 1.5% in 2011 (using 2001 level as baseline) for non-BID blocks, while by 1% in BID-blocks, and in the endpoint of our panel they all return to be closer to their initial value but with BID-blocks presenting again the lowest (relative) change.

The results in panel (c) and (d) speak about the ethnic mix that these neighborhoods present at different points in time. While the shares of white and BAME residents decrease and increase, respectively, for all blocks, the ones with some exposure to BIDs clearly tend to have a relatively higher share of white residents - the decrease amounts to around 1.8% versus more than 2% for non BID-blocks; and at the same time, the relative increase in BAME share is much lower, with non-BID blocks ending with almost 4% higher fraction of BAME residents in 2021 (while BID-blocks are at most 3%).

This associational evidence could depict BIDs as potential drivers of gentrification for downtown areas in London, as the absence of property price signals from pre-BID years induces to discard a mechanism for which gentrifying neighborhoods make BIDs more likely to form. The limitations with data on blocks (especially the frequency) make us refrain from attaching any causal interpretation to this exercise, but these findings call for attention regarding the assessment of neighborhood improvements when residential sorting dynamics may take place, especially considering the potential displacement of current residents in the longer run.

6 Conclusion

In this paper, we quantify a positive externality on residential properties from the collective action of business owners, in Greater London, through the establishment of Business Improvement Districts. These place-management organizations are funded with business owners contributions and spend

more than 800 thousand pounds per year, on average, in London on area-specific initiatives relating to crime and environmental quality (among other neighborhood aspects).

Our findings raise some important points on the role of place-management groups for their neighborhoods. Local non-resident stakeholders initiatives with interest in the community, like BIDs, may not only have effects on the target of their investments (e.g., reducing crime as in Brooks, 2008; Faggio, 2022) but also result in broader economic consequences, concerning housing markets and property appreciation, which we quantify at around 3% and see as a positive externality. Moreover, neighborhoods that fall within the boundaries of BIDs, hence enjoying the related benefits in terms of services and amenities, also show gentrification trajectories in line with model predictions and other empirical findings on urban revitalization programs.

The evidence provided in this paper also suggests that sales levels, especially for new-building dwellings (flats, mostly), are also impacted positively by BIDs formation when compared to outer areas. A potential explanation is that homeowners or developers might free-ride on the beneficial effects on local quality of BIDs and sell properties at a premium (or faster) - a scenario that is most unlikely to happen when residents are called to finance of local public goods (Hilber, 2017), but that in our case could motivate an incentive to free-ride on other agents' (BIDs) contributions to public goods.

The interaction of BIDs funding for the common interest and local authorities spending is also a mechanism that might be at play. In a political environment where public spending underwent sensible cuts, BIDs might have "shielded" the local areas from the effects of the underprovision. However, we cannot exclude, as of present day, that certain sources of public spending (e.g., policing) have not been reduced by local authorities where BIDs were more actively involved with crime prevention and safety.

The formation process of these business-led entities is also a topic worth of discussion, and whether the location, the types of businesses and the budgeting for different investments are intertwined is left for future research, since the urban geography of businesses might affect the likelihood of BIDs creation and the aims of institutions that policy-makers and local governments may start to take into account for public policy and spending.

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Figures

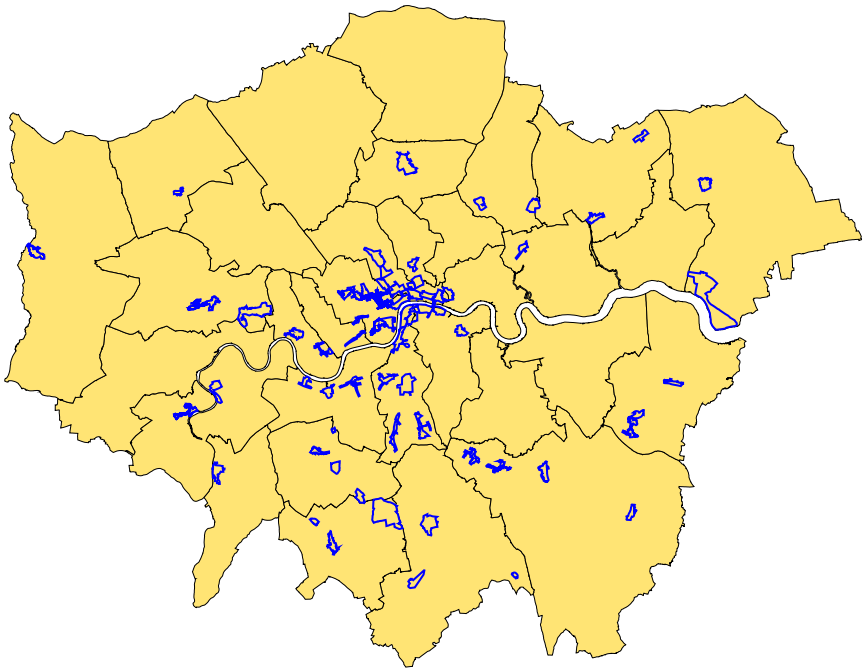


Figure 1: Geographic coverage of BIDs. Notes: The black lines delimit each local authority. The blue lines delimit each Business Improvement District.

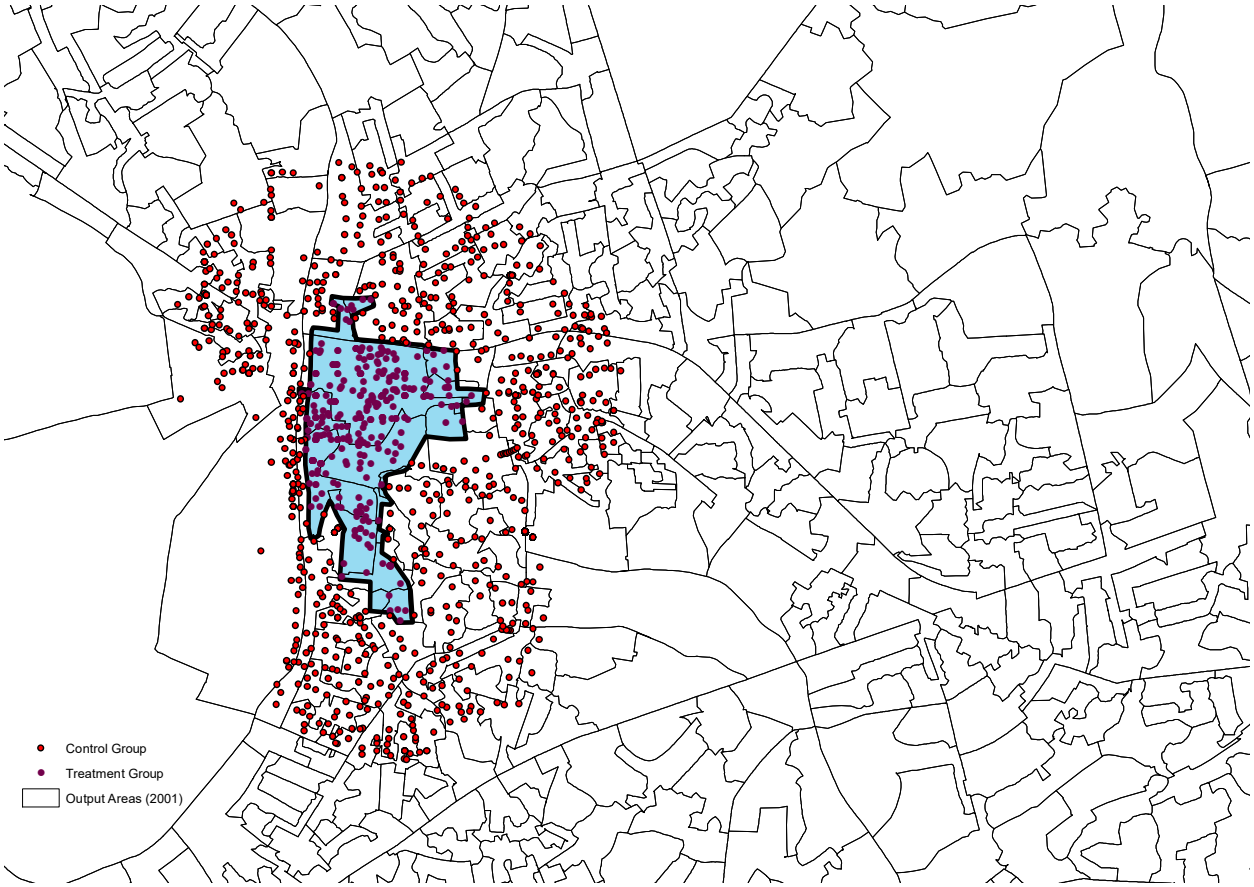
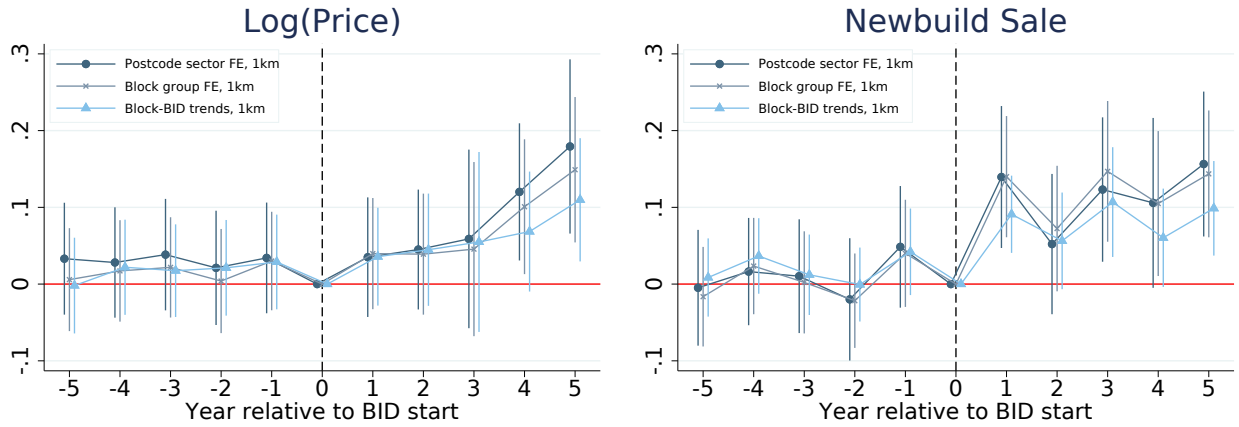
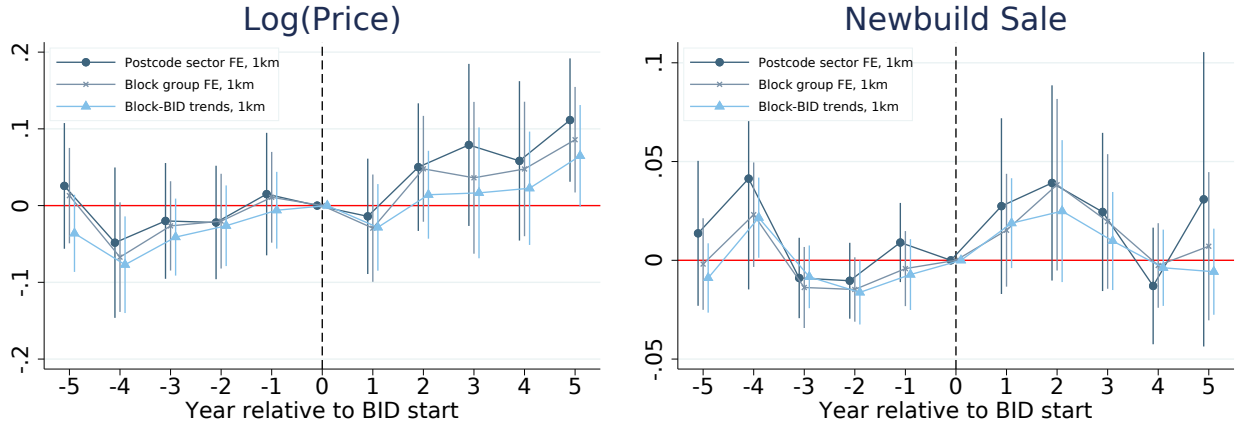


Figure 2: Illustration of control vs treatment group postcodes for the BID in Kingston upon Thames. Notes: The black lines delimit each local Output Area (blocks). The blue-shaded area represents area within the Kingston Upon Thames BID. The purple dots indicate postcodes which lie within the borders of the BID, hence in the treatment group. The red dots indicate postcodes that fall within a 1 kilometer radius from the BID boundaries, hence in the control group.

(a) Composite sample



(b) Terraced houses



(c) Flats

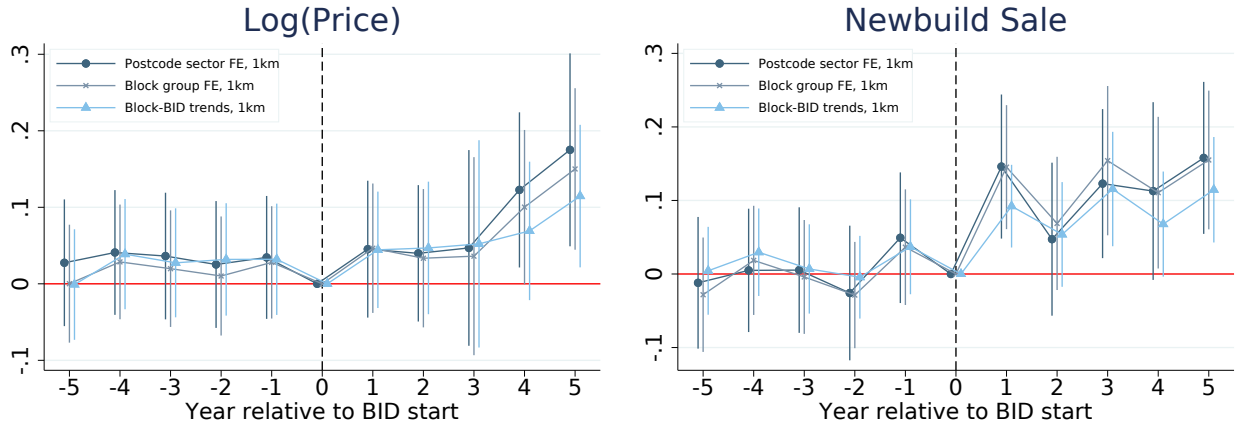
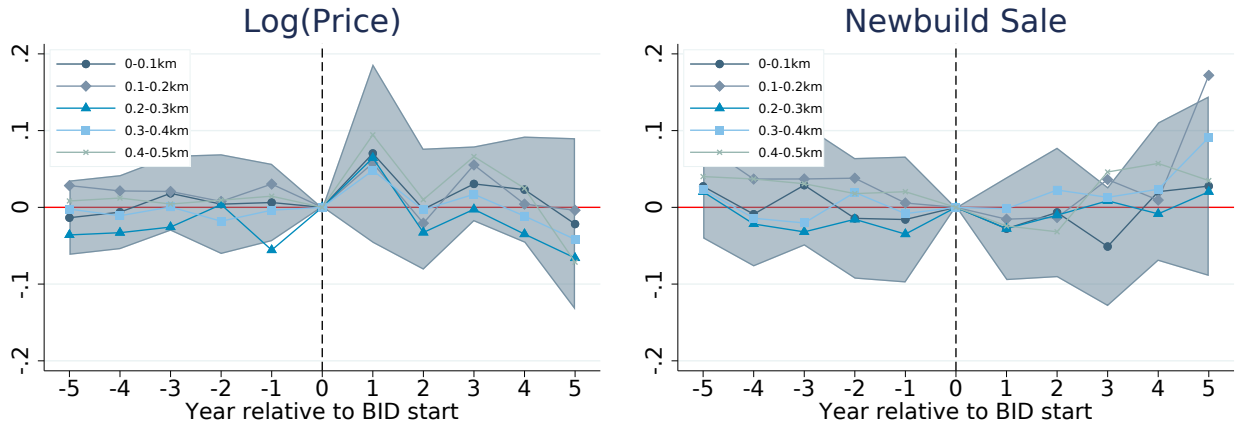
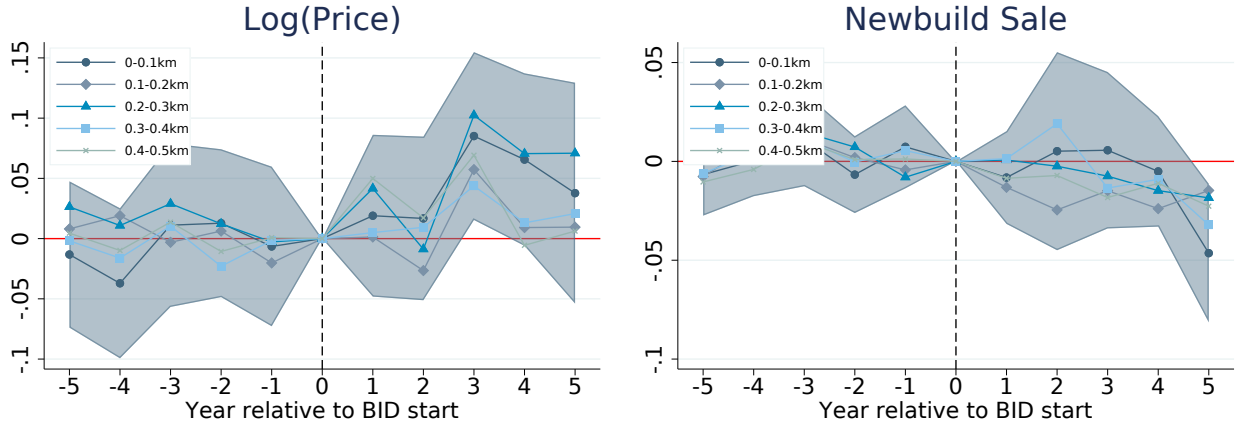


Figure 3: Effect of BID opening on property price and share of new-building property sales. Notes: This figure shows the effects of BID openings on property (log) prices and share of new-building property sales as estimated from the difference-in-differences equation (2) - along with 95% confidence intervals constructed with standard errors clustered at census tract-year level.

(a) Composite sample



(b) Terraced



(c) Flats

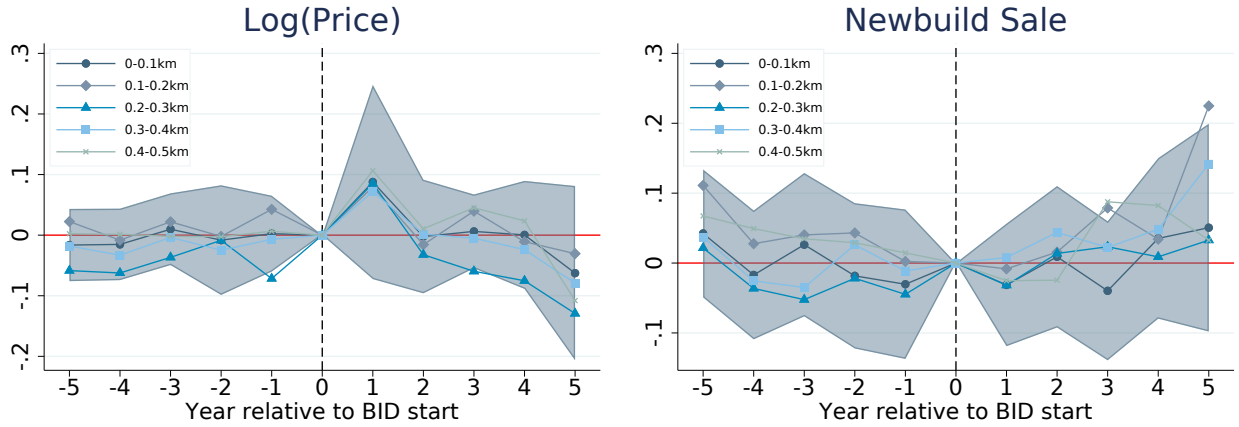


Figure 4: Effect of BID opening on property price and share of new-building sales within the control group. Notes: This figure reports coefficients δ_{rt} from the difference-in-differences equation (3) with block-BID trends for each concentric 100m ring within 500m of a BID. The shaded area refers to the 95% confidence interval of the first ring (0-100m).

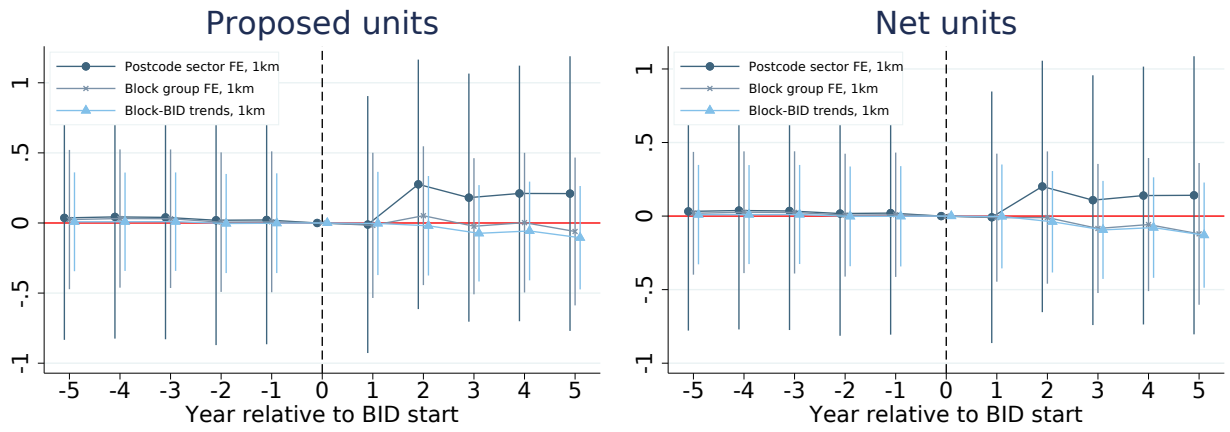
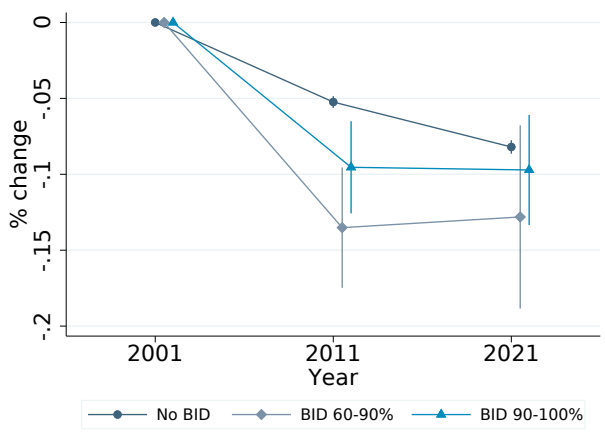
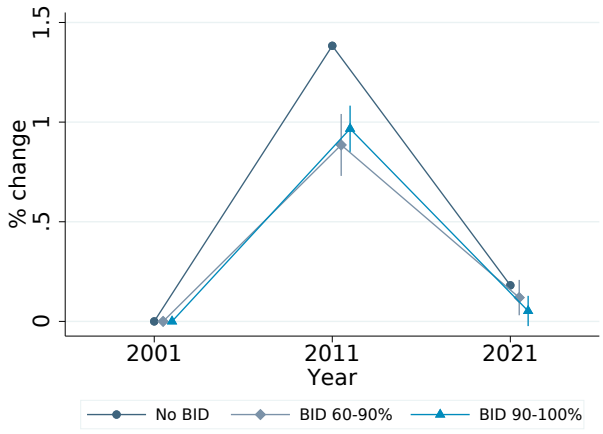


Figure 5: Effect of BID opening on housing planning applications. Notes: This figure shows the effects of BID openings on the number of proposed units and net units (proposed-demolished) from the records of housing planning applications. The coefficients are estimated as in the difference-in-differences equation (5) - along with 95% confidence intervals constructed with standard errors clustered at census tract-year level.

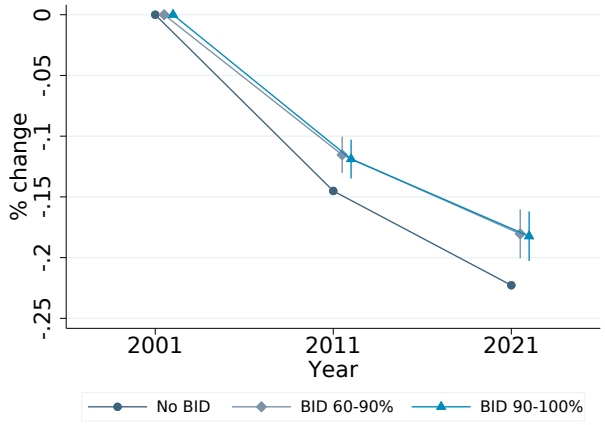
(a) Social renters share



(b) Unemployed share



(c) White share



(d) BAME share

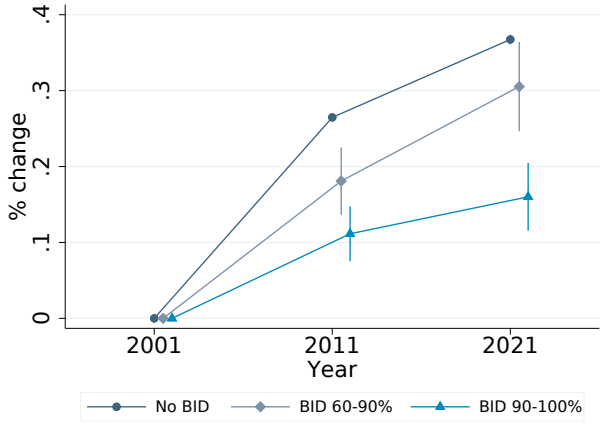


Figure 6: Evolution of the share of social renters, unemployed residents, white and BAME residents in the block. Notes: This figure plots the estimated change (in percentage terms relative to the initial average) over time for census-derived indicators for the block residents. All regressions include block FE.

Tables

Table 1: Effect of BIDs on property price

	(1) Postcode sector FE	(2) Census tract FE	(3) Block group FE	(4) Block FE	(5) Block-BID trends
(a) **Composite sample**					
$\text{WithinBID}_i * \text{PostBID}_t$	0.029*	0.050***	0.037***	0.026**	0.026**
	(0.017)	(0.018)	(0.014)	(0.010)	(0.010)
Covariates	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Baseline Price (treated)	486475	486708	486708	486758	486791
Clusters	3641	3638	3638	3636	3635
Observations	187777	187789	187784	187697	187671
(b) **Terraced houses**					
$\text{WithinBID}_i * \text{PostBID}_t$	0.044**	0.035*	0.039**	0.046***	0.045***
	(0.020)	(0.020)	(0.016)	(0.014)	(0.014)
Covariates	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Baseline Price (treated)	743809	746296	746496	745601	745811
Clusters	3182	3189	3182	3164	3159
Observations	48916	48948	48909	48482	48445
(c) **Flats**					
$\text{WithinBID}_i * \text{PostBID}_t$	0.025	0.044**	0.034**	0.020*	0.020*
	(0.018)	(0.019)	(0.015)	(0.012)	(0.012)
Covariates	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Baseline Price (treated)	437447	437432	437432	437246	437278
Clusters	3454	3453	3450	3448	3446
Observations	138823	138835	138821	138645	138614

Note: This table shows the effect of BID openings on property (log) prices for the composite sample of terraced houses and flats (panel (a)) and subsamples of terraced houses and flats (panel (b) and (c), respectively), as in equation (1), according to different neighborhood FE specifications. The explanatory variable of main interest is a dummy WithinBID_i that is equal to 1 for treated postcodes, interacted with a dummy PostBID_t equal to 1 for the period since BID opening. The regressions in panel (a) include a dummy for terraced houses. All regressions include on the right-hand side WithinBID_i, the whole set of covariates and year FE. Standard errors clustered at the census tract-year level are displayed in parentheses.

Table 2: Effect of BIDs on share of new-building property sales

	(1) Postcode sector FE	(2) Census tract FE	(3) Block group FE	(4) Block FE	(5) Block-BID trends
(a) **Composite sample**					
$\text{WithinBID}_i * \text{PostBID}_t$	0.080***	0.098***	0.090***	0.045***	0.042***
	(0.023)	(0.024)	(0.019)	(0.014)	(0.014)
Covariates	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Baseline Sales (treated)	0.194	0.194	0.194	0.194	0.194
Clusters	3641	3638	3638	3636	3635
Observations	187777	187789	187784	187697	187671
(b) **Terraced houses**					
$\text{WithinBID}_i * \text{PostBID}_t$	0.007	0.011	0.014*	0.012*	0.012*
	(0.011)	(0.010)	(0.007)	(0.006)	(0.006)
Covariates	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Baseline Sales (treated)	0.024	0.024	0.024	0.025	0.025
Clusters	3182	3189	3182	3164	3159
Observations	48916	48948	48909	48482	48445
(c) **Flats**					
$\text{WithinBID}_i * \text{PostBID}_t$	0.087***	0.107***	0.099***	0.053***	0.051***
	(0.025)	(0.027)	(0.021)	(0.016)	(0.016)
Covariates	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Baseline Sales (treated)	0.226	0.226	0.226	0.226	0.226
Clusters	3454	3453	3450	3448	3446
Observations	138823	138835	138821	138645	138614

Note: This table shows the effect of BID openings on the share of new-building property sales for the composite sample of terraced houses and flats (panel (a)) and subsamples of terraced houses and flats (panel (b) and (c), respectively), as in equation (1), according to different neighborhood FE specifications. The explanatory variable of main interest is a dummy WithinBID_i that is equal to 1 for treated postcodes, interacted with a dummy PostBID_t equal to 1 for the period since BID opening. The regressions in panel (a) include a dummy for terraced houses. All regressions include on the right-hand side WithinBID_i, the whole set of covariates and year FE. Standard errors clustered at the census tract-year level are displayed in parentheses.

Table 3: Effect of BIDs on property prices and share of new-building property sales by BID characteristics

	Levy rate		Annual budget		Share on crime and environment	
	(1) Bottom 50%	(2) Top 50%	(3) Bottom 50%	(4) Top 50%	(5) Bottom 50%	(6) Top 50%
(a) Property (log) price						
$\text{WithinBID}_i * \text{PostBID}_t$	0.028*	0.016	-0.004	0.029**	-0.005	0.028*
	(0.015)	(0.014)	(0.014)	(0.014)	(0.013)	(0.016)
Baseline Price (treated)	572546	428116	402335	570164	512500	448601
Clusters	1544	2010	2184	1623	1612	1947
Observations	78528	100959	96133	88246	84106	87346
(b) Newbuild Sale						
$\text{WithinBID}_i * \text{PostBID}_t$	0.048**	0.030*	0.018	0.056***	0.005	0.069***
	(0.022)	(0.017)	(0.019)	(0.020)	(0.019)	(0.020)
Baseline Sales (treated)	0.212	0.183	0.189	0.201	0.184	0.213
Clusters	1544	2010	2184	1623	1612	1947
Observations	78528	100959	96133	88246	84106	87346

Note: This table shows the effect of BID openings on property price (panel (a)) and the share of new-building property sales (panel (b)) for the composite sample of terraced houses and flats by levels of levy rate, annual budget and budget share devoted to crime and environment-related expenditures. The explanatory variable of main interest is a dummy WithinBID_i that is equal to 1 for treated postcodes, interacted with a dummy PostBID_t equal to 1 for the period since BID opening. The regressions include a dummy for terraced houses. All regressions include on the right-hand side WithinBID_i, the whole set of covariates and year FE. Standard errors clustered at the census tract-year level are displayed in parentheses.

Table 4: Effect of BIDs on housing planning applications

	(1) Postcode sector FE	(2) Census tract FE	(3) Block group FE	(4) Block FE	(5) Block-BID trends
(a) Dep.Var.: Proposed units					
WithinBID_p	-0.257	-0.046	0.250*	0.611***	0.699***
	(0.177)	(0.143)	(0.128)	(0.168)	(0.172)
$\text{WithinBID}_p * \text{PostBID}_t$	0.098	0.031	-0.026	-0.033	-0.041
	(0.194)	(0.149)	(0.113)	(0.080)	(0.080)
Covariates	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Baseline Units (treated)	1.575	1.575	1.575	1.575	1.575
Clusters	4002	4002	4002	4002	4002
Observations	1151136	1151136	1151136	1151136	1151136
(b) Dep.Var.: Net units					
WithinBID_p	-0.121	0.142	0.358***	0.637***	0.727***
	(0.158)	(0.103)	(0.106)	(0.163)	(0.167)
$\text{WithinBID}_p * \text{PostBID}_t$	0.059	-0.024	-0.058	-0.047	-0.055
	(0.183)	(0.122)	(0.100)	(0.077)	(0.078)
Covariates	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Baseline Units (treated)	1.519	1.519	1.519	1.519	1.519
Clusters	4002	4002	4002	4002	4002
Observations	1151136	1151136	1151136	1151136	1151136

Note: This table shows the effect of BID openings on on the number of proposed units and net units (proposed-demolished) from the records of housing planning applications. The explanatory variable of main interest is a dummy WithinBID_i that is equal to 1 for treated postcodes, interacted with a dummy PostBID_t equal to 1 for the period since BID opening. The regressions include a dummy for terraced houses. All regressions include on the right-hand side WithinBID_i, the whole set of covariates and year FE. Standard errors clustered at the census tract-year level are displayed in parentheses.

Appendix A

Figure A1: Number of BIDs by formation year

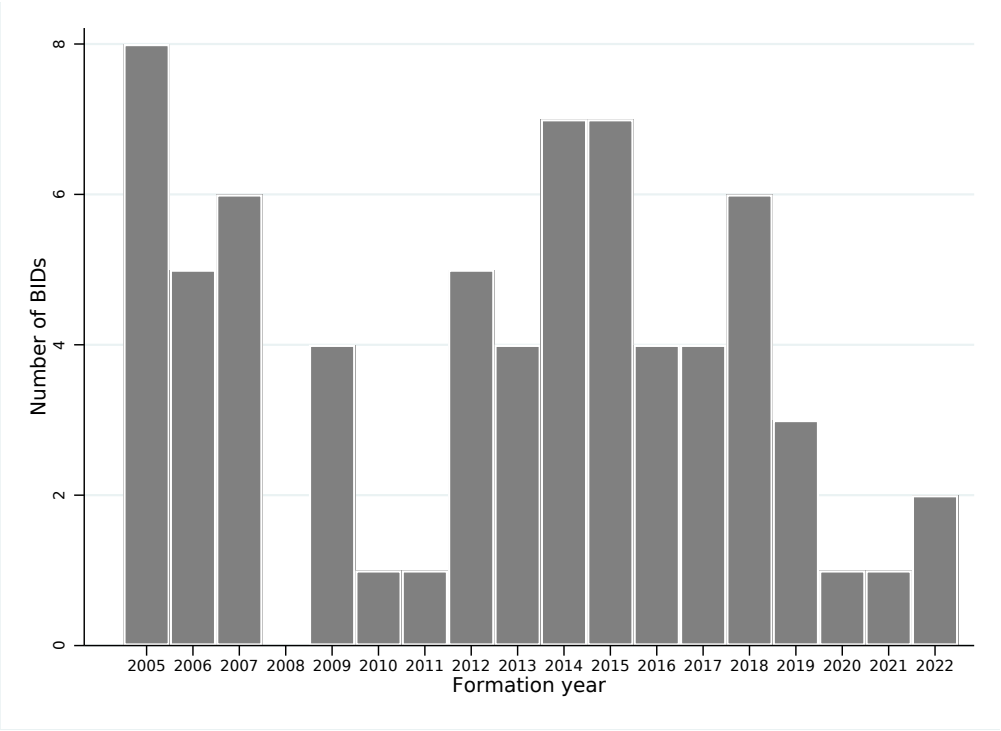


Table A1: Summary statistics per BID

Variable	Mean	Std. Dev.	Min	Max
(a) *BID characteristics*				
BID size (in square meters)	496,717.6	545,963.3	653.763	3,924,701
Years of activity	10.406	4.989	1	18
Postcodes within BID	516.696	588.389	4	2,558
Levy (%)	1.226	.379	.002	2.3
Annual Budget	806,377.7	1,186,588	36,250	8,200,000
(b) *Transaction characteristics* (2000-2019)				
Number of transactions	1,233.362	989.833	1	4,775
Average value of transactions (base 2010,£)	657,246.8	576,656.4	121,648.8	2,939,339
Detached houses (%)	0.015	0.071	0	0.5
Flats (%)	0.491	0.452	0	1
Semi-detached houses (%)	0.001	0.006	0	0.053
Terraced houses (%)	0.077	0.17	0	1
(c) *Block characteristics* (Census 2001)				
Density (per hectare)	59.286	41.095	0.92	158.441
Owned properties	0.442	0.179	0.163	0.909
Private rented	0.29	0.129	0.03	0.58
Social rented	0.233	0.176	0.014	0.676
White residents	0.769	0.119	0.453	0.936
BAME residents	0.231	0.119	0.064	0.547
Unemployed	0.036	0.013	0.008	0.064
Managers, professionals and administrative	0.394	0.117	0.151	0.739

Note: This table presents a set of summary statistics per BID. Panel (a) refers to BID characteristics, such as size, years of activity, the number of postcodes that fall inside their boundaries, levy and the proposed annual budget in their business plans. Panel (b) comprises information on the transactions that took place inside the BIDs, such the total number, average value and the share of type of property. Panel (c) displays information on the census variables within BIDs. It contains information on the mean across BIDs, on the standard deviation, minimum and maximum value.

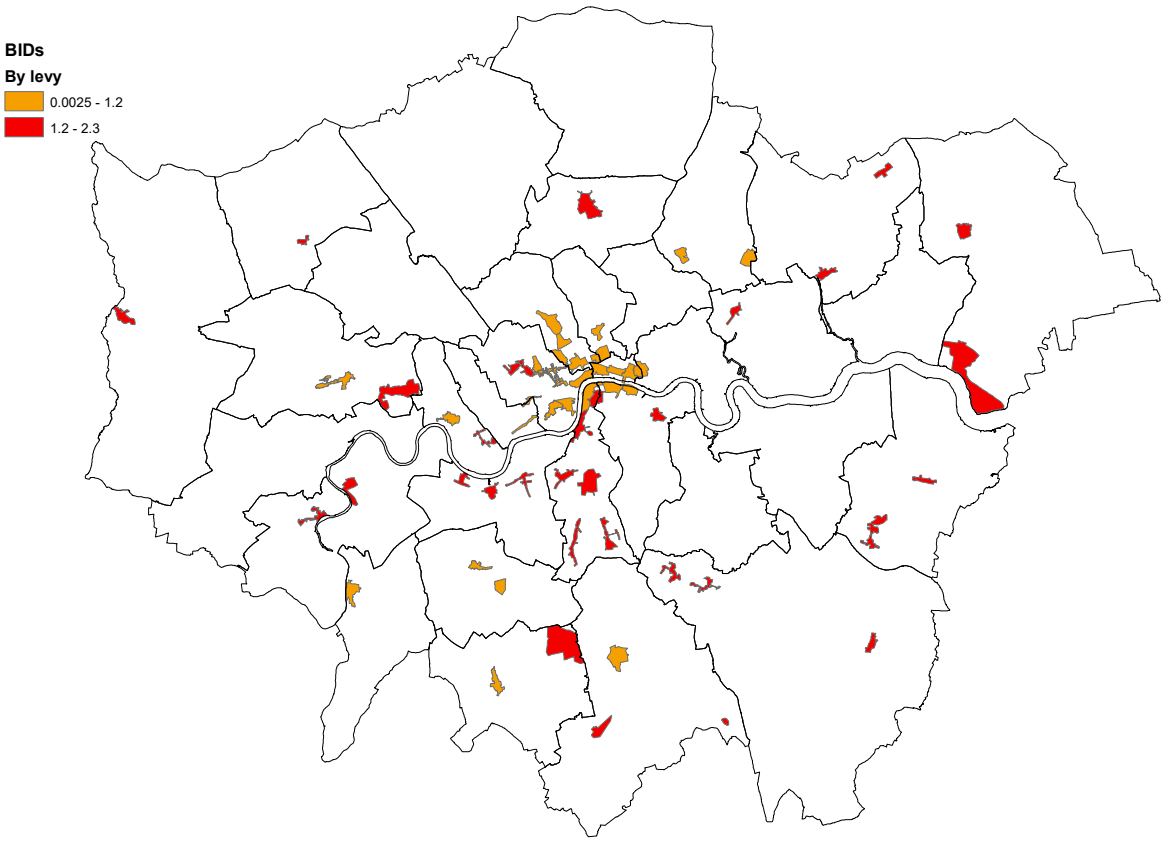


Figure A2: Distribution of BIDs across London, by levy rate group (below vs above median)

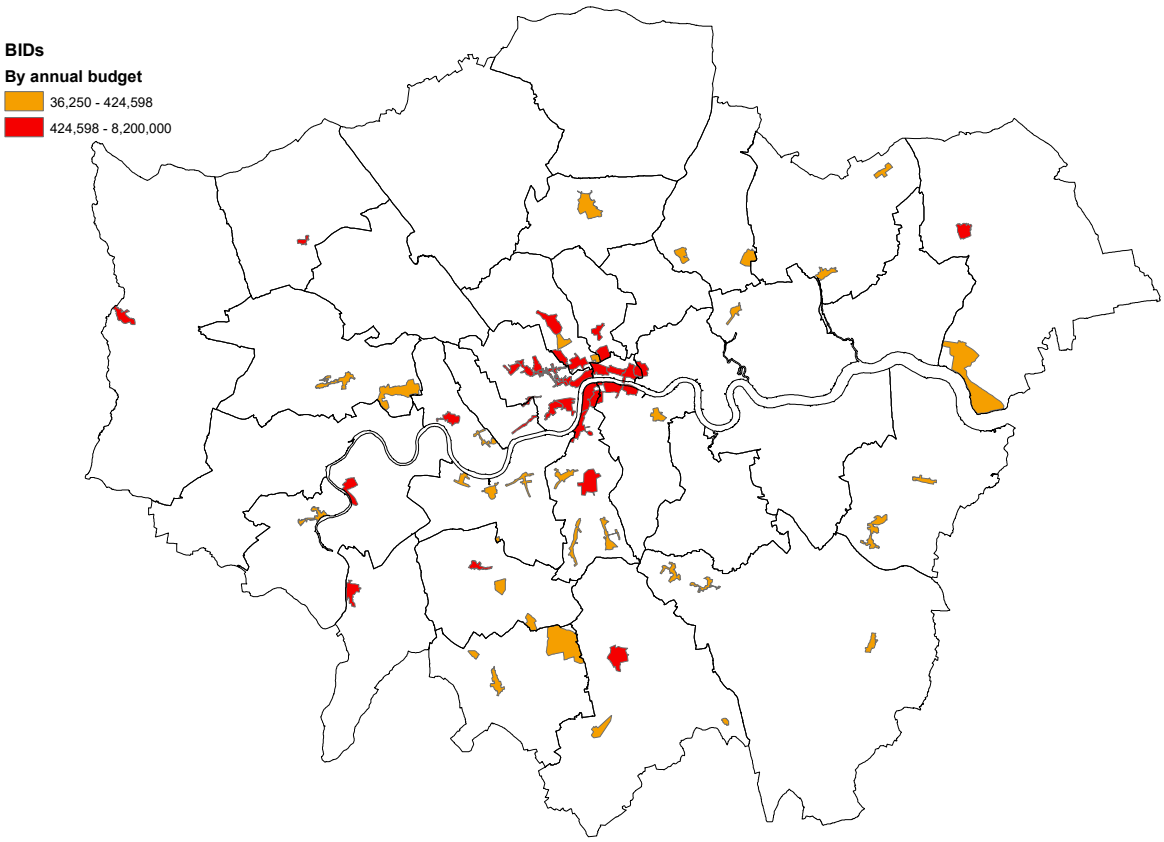


Figure A3: Distribution of BIDs across London, by annual budget group (below vs above median)

Figure A4: Distribution of BIDs across London, by crime-environment budget share group (below vs above median)

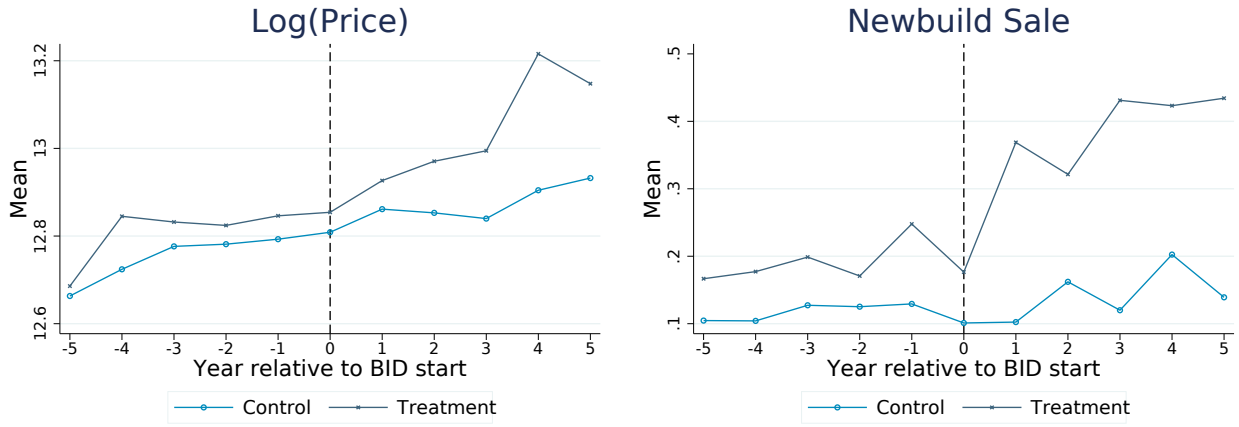
Appendix B

Table B1: Summary statistics by group at the baseline period

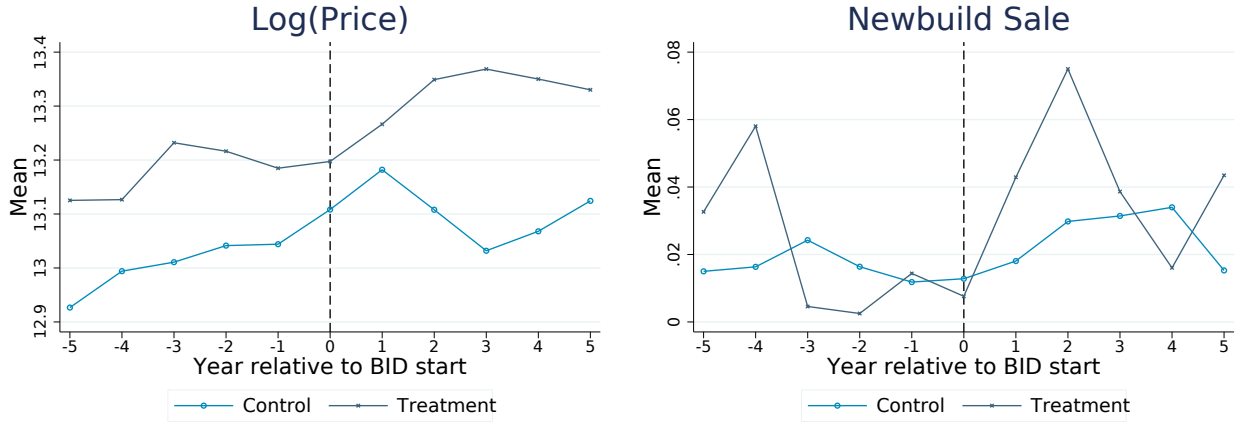
Variable	(1) Outside BID: any distance	(2) Outside BID: $\leq$ 1km	(3) Within BID
(a) *Outcomes*			
Property price (100,000s £)	3.49	4.62	4.86
	(0.038)	(0.119)	(0.188)
Log(Price)	12.553	12.747	12.809
	(0.007)	(0.016)	(0.029)
New-building property	0.106	0.118	0.194
	(0.004)	(0.008)	(0.020)
(b) *Covariates*			
Terraced	0.414	0.304	0.159
	(0.004)	(0.007)	(0.010)
Leasehold	0.587	0.698	0.842
	(0.004)	(0.007)	(0.010)
Town Centre	0.036	0.052	0.279
	(0.002)	(0.005)	(0.024)
Distance to Park (m)	4670.074	3918.701	3230.210
	(55.004)	(108.698)	(178.810)
Historic buildings	0.065	0.177	0.363
	(0.005)	(0.020)	(0.051)
Thames River view	0.026	0.043	0.022
	(0.002)	(0.006)	(0.004)
Observations	397113	85453	14193

Note: This table presents a set of summary statistics across groups of transacted properties: properties at any distance from the closest BID, properties within 1 kilometer from the closest BID, and properties within a BID.

(a) Composite sample



(b) Terraced



(c) Flats

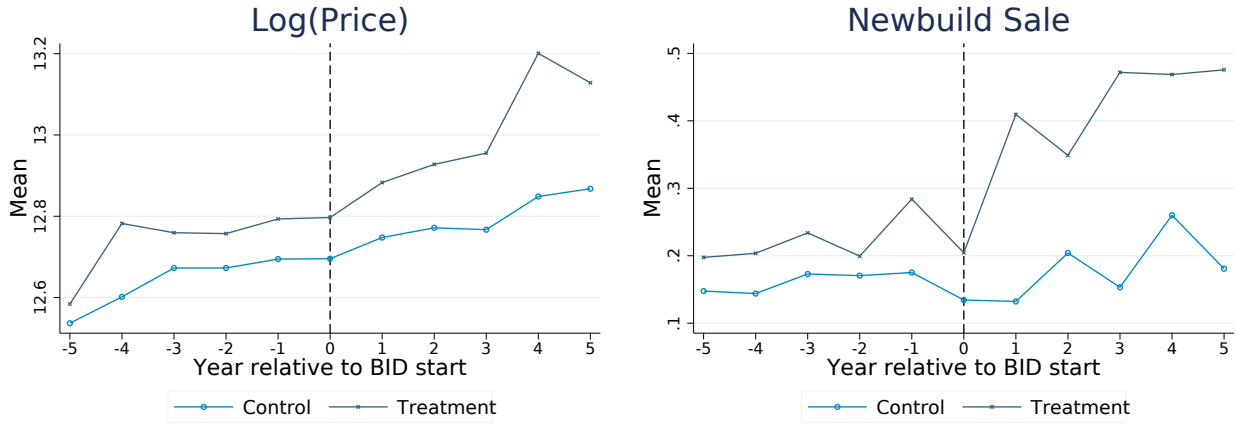


Figure B1: Unconditional trend plots Notes: This figure plots the unconditional property (log) price and share of new-building property sales for both the control ($\leq$ 1km from BID) and treatment (within a BID) groups.

Table B2: Parallel trends test on property price

	Composite sample			**Terraced houses**			**Flats**		
	(1) Postcode sector FE	(2) Block group FE	(3) Block-BID trends	(4) Postcode sector FE	(5) Block group FE	(6) Block-BID trends	(7) Postcode sector FE	(8) Block group FE	(9) Block-BID trends
WithinBID$_i$*Time$_{-5}$ (reference period)									
WithinBID$_i$*Time$_{-4}$	-0.001	0.008	0.022	-0.068	-0.077**	-0.046*	0.018	0.024	0.038**
	(0.026)	(0.025)	(0.018)	(0.046)	(0.032)	(0.028)	(0.027)	(0.026)	(0.018)
WithinBID$_i$*Time$_{-3}$	0.012	0.019	0.017	-0.027	-0.029	-0.001	0.017	0.023	0.021
	(0.026)	(0.023)	(0.016)	(0.036)	(0.027)	(0.022)	(0.028)	(0.025)	(0.017)
WithinBID$_i$*Time$_{-2}$	-0.005	-0.000	0.019	-0.041	-0.022	0.011	0.006	0.010	0.025
	(0.027)	(0.023)	(0.017)	(0.036)	(0.029)	(0.025)	(0.028)	(0.024)	(0.017)
WithinBID$_i$*Time$_{-1}$	0.001	0.021	0.030*	-0.001	0.008	0.030	0.007	0.021	0.030*
	(0.025)	(0.022)	(0.017)	(0.038)	(0.027)	(0.024)	(0.026)	(0.023)	(0.017)
Covariates	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
F-stat	0.116	0.431	0.822	0.850	2.129	1.673	0.151	0.348	1.336
p-value	0.977	0.786	0.511	0.493	0.075	0.154	0.962	0.845	0.254
R2	0.707	0.730	0.999	0.810	0.837	1.000	0.657	0.682	0.999
Clusters	2004	2000	1991	1708	1699	1672	1897	1894	1886
Observations	99642	99646	99454	28167	28136	27565	71436	71431	71098

Note: This table shows the results of the tests of parallel trends for property prices, conditional on the set of covariates, year FE and different neighborhood FE specifications. The explanatory variable of main interest is a dummy WithinBID$_i$ that is equal to 1 for properties in treated postcode units, interacted with a dummy $Time_k$ with $k \in \{-5, \ldots, -1\}$, equal to 1 for each period before BID opening. Results are shown for each sample (composite, terraced houses and flats only) from the postcode sector FE, block group FE and block-BID trends specification, respectively. F-statistics of joint significance of the coefficients and p-values are also reported. Standard errors clustered at the census tract-year level are displayed in parentheses.

Table B3: Parallel trends test on share of new-building property sales

	Composite sample			**Terraced houses**			**Flats**		
	(1) Postcode sector FE	(2) Block group FE	(3) Block-BID trends	(4) Postcode sector FE	(5) Block group FE	(6) Block-BID trends	(7) Postcode sector FE	(8) Block group FE	(9) Block-BID trends
$\text{WithinBID}_i * \text{Time}_{-5}$ (reference period)									
$\text{WithinBID}_i * \text{Time}_{-4}$	0.026	0.026	0.028	0.026	0.023	0.021*	0.022	0.023	0.026
	(0.038)	(0.034)	(0.024)	(0.031)	(0.015)	(0.011)	(0.043)	(0.040)	(0.029)
$\text{WithinBID}_i * \text{Time}_{-3}$	0.025	0.011	0.007	-0.020	-0.014	-0.006	0.024	0.012	0.004
	(0.040)	(0.034)	(0.023)	(0.019)	(0.014)	(0.011)	(0.045)	(0.040)	(0.028)
$\text{WithinBID}_i * \text{Time}_{-2}$	0.008	0.003	0.004	-0.023	-0.011	-0.009	0.009	0.008	0.004
	(0.040)	(0.034)	(0.022)	(0.018)	(0.011)	(0.009)	(0.045)	(0.040)	(0.026)
$\text{WithinBID}_i * \text{Time}_{-1}$	0.071*	0.052	0.040*	-0.002	-0.002	0.000	0.078*	0.054	0.037
	(0.041)	(0.035)	(0.024)	(0.018)	(0.012)	(0.010)	(0.046)	(0.040)	(0.028)
Covariates	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
F-stat	0.877	0.819	0.978	1.734	2.204	1.943	0.882	0.601	0.615
p-value	0.477	0.513	0.419	0.140	0.066	0.101	0.474	0.662	0.652
R2	0.264	0.365	0.573	0.205	0.312	0.484	0.288	0.387	0.606
Clusters	2004	2000	1991	1708	1699	1672	1897	1894	1886
Observations	99642	99646	99454	28167	28136	27565	71436	71431	71098

Note: This table shows the results of the tests of parallel trends for share of new-building property sales, conditional on the set of covariates, year FE and different neighborhood FE specifications. The explanatory variable of main interest is a dummy WithinBID_i that is equal to 1 for properties in treated postcode units, interacted with a dummy $Time_k$ with $k \in \{-5, \ldots, -1\}$, equal to 1 for each period before BID opening. Results are shown for each sample (composite, terraced houses and flats only) from the postcode sector FE, block group FE and block-BID trends specification, respectively. F-statistics of joint significance of the coefficients and p-values are also reported. Standard errors clustered at the census tract-year level are displayed in parentheses.

Table B4: Robustness checks on BID effects

	(1) No price outliers	(2) No volume outliers	(3) London CCZ dummies	(4) Inner London only	(5) New-building dummy	(6) Pre-existing terraced
(a) Dep.Var.: Log(Price)						
$\text{WithinBID}_i * \text{PostBID}_t$	0.019**	0.023**	0.025**	0.037***	0.020**	0.042***
	(0.009)	(0.010)	(0.011)	(0.012)	(0.010)	(0.013)
Covariates	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Block-BID trends	✓	✓	✓	✓	✓	✓
Baseline Price (treated)	445294	473407	486791	582788	486791	743634
Clusters	3632	3630	3635	1796	3635	3155
Observations	183681	182502	187671	105094	187671	47466
(b) Dep.Var.: New-building sales (pp)						
$\text{WithinBID}_i * \text{PostBID}_t$	0.037***	0.034**	0.044***	0.058***		
	(0.014)	(0.014)	(0.014)	(0.016)		
Covariates	✓	✓	✓	✓		
Year FE	✓	✓	✓	✓		
Block-BID trends	✓	✓	✓	✓		
Baseline Sales (treated)	0.198	0.198	0.194	0.188		
Clusters	3632	3630	3635	1796		
Observations	183681	182502	187671	105094		

Note: This table shows the effect of BID openings on property (log) price and share of new-building property sales as in equation (1), but altering estimation samples or controlling for other potential confounding factors. The explanatory variable of main interest is a dummy WithinBID_i that is equal to 1 for treated postcodes, interacted with a dummy PostBID_t equal to 1 for the period since BID opening. The regressions in columns (1)-(5) include a dummy for terraced houses. All regressions include on the right-hand side WithinBID_i, the whole set of covariates and year FE. Standard errors clustered at the census tract-year level are displayed in parentheses.

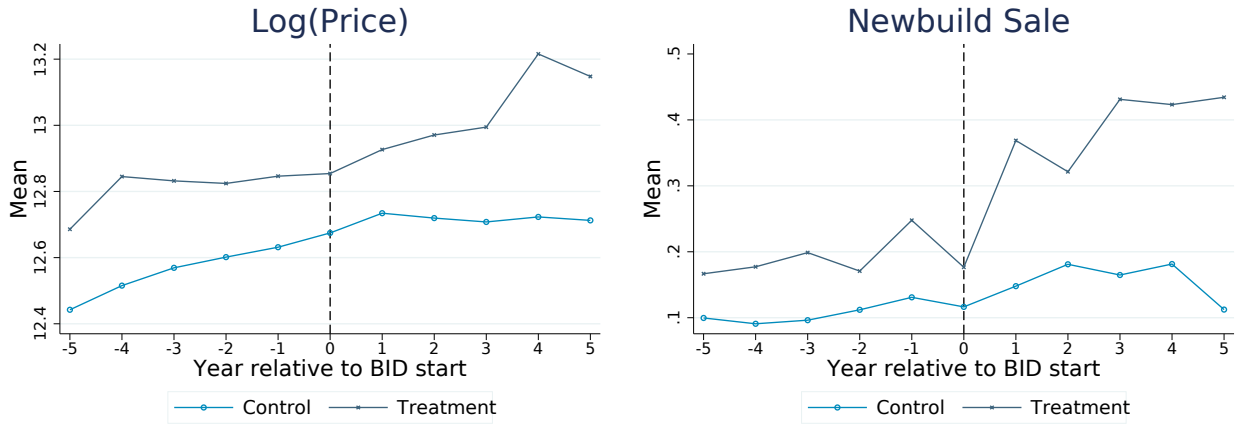
Table B5: Effect of BIDs on property and postcode characteristics

	(1) Terraced	(2) Leasehold	(3) Town Centre	(4) Distance to Park	(5) Historic buildings	(6) Thames River view
$\text{WithinBID}_i * \text{PostBID}_t$	-0.008	0.011*	0.006	7.369**	0.027	0.007*
	(0.006)	(0.006)	(0.009)	(3.206)	(0.018)	(0.004)
Covariates	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓
Block-BID trends	✓	✓	✓	✓	✓	✓
Treated at baseline	0.160	0.842	0.279	3230	0.365	0.022
Control at baseline	0.303	0.698	0.052	3918	0.177	0.043
R2	0.990	0.986	0.819	1.000	0.911	0.811
Clusters	3635	3635	3635	3635	3635	3635
Observations	187671	187671	187671	187671	187671	187671

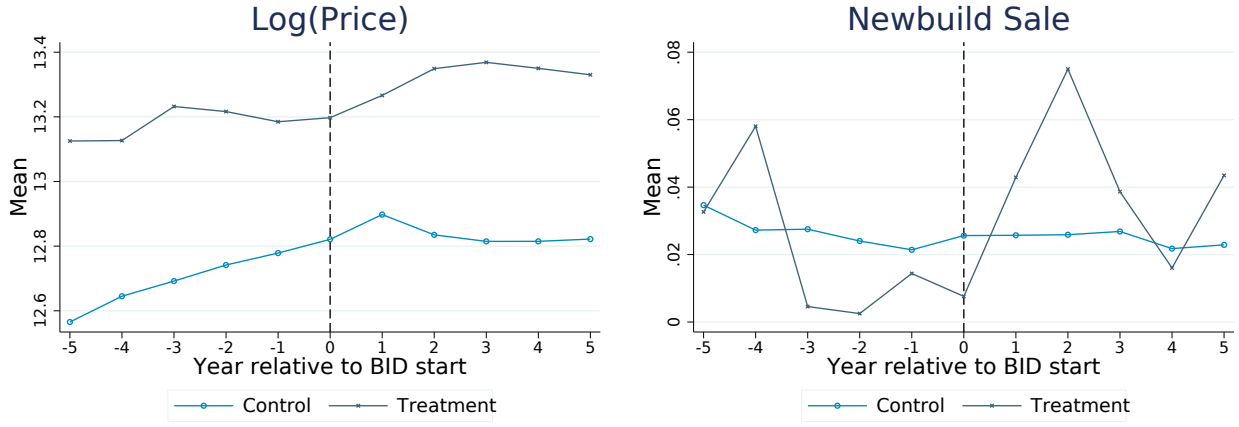
Note: This table shows the effect of BID openings on the set of covariates from a difference-in-difference model as in equation (1). The explanatory variable of main interest is a dummy WithinBID_i that is equal to 1 for treated postcodes, interacted with a dummy PostBID_t equal to 1 for the period since BID opening. All regressions include on the right-hand side WithinBID_i, the (remaining) set of postcode unit-level covariates and year FE. Standard errors clustered at the census tract-year level are displayed in parentheses.

Appendix C - Expanded control group

(a) Composite sample



(b) Terraced



(c) Flats

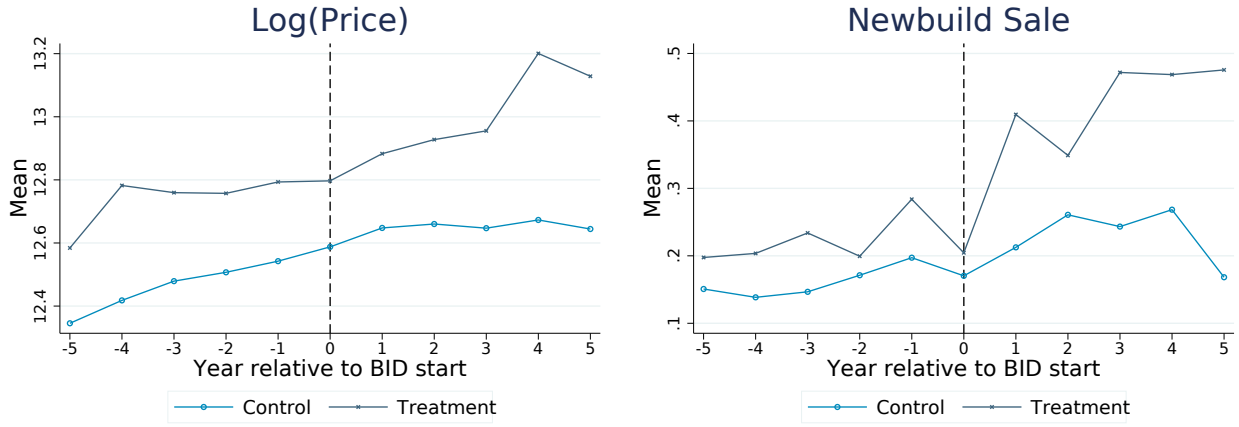


Figure C1: Unconditional trend plots Notes: This figure plots the unconditional property (log) price and share of new-building property sales for both the control (any distance from BID) and treatment (within a BID) groups.

Table C1: Parallel trends test on property price

	Composite sample			**Terraced houses**			**Flats**		
	(1) Postcode sector FE	(2) Block group FE	(3) Block-BID trends	(4) Postcode sector FE	(5) Block group FE	(6) Block-BID trends	(7) Postcode sector FE	(8) Block group FE	(9) Block-BID trends
$\text{WithinBID}_i * \text{Time}_{-5}$ (reference period)									
$\text{WithinBID}_i * \text{Time}_{-4}$	0.000	0.008	0.022	-0.073	-0.079**	-0.058**	0.022	0.024	0.038**
	(0.026)	(0.024)	(0.018)	(0.054)	(0.031)	(0.028)	(0.027)	(0.025)	(0.018)
$\text{WithinBID}_i * \text{Time}_{-3}$	0.008	0.017	0.010	-0.049	-0.043*	-0.022	0.025	0.027	0.019
	(0.025)	(0.022)	(0.016)	(0.043)	(0.026)	(0.021)	(0.027)	(0.024)	(0.016)
$\text{WithinBID}_i * \text{Time}_{-2}$	-0.022	-0.011	0.006	-0.074*	-0.051*	-0.026	-0.001	0.006	0.018
	(0.026)	(0.022)	(0.017)	(0.043)	(0.028)	(0.024)	(0.026)	(0.023)	(0.016)
$\text{WithinBID}_i * \text{Time}_{-1}$	-0.010	0.004	0.013	-0.036	-0.019	-0.005	0.006	0.013	0.023
	(0.026)	(0.021)	(0.017)	(0.047)	(0.027)	(0.024)	(0.026)	(0.022)	(0.017)
Covariates	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
F-stat	0.433	0.476	0.430	0.887	2.011	1.338	0.432	0.459	1.175
p-value	0.785	0.753	0.787	0.471	0.090	0.253	0.785	0.766	0.320
R2	0.697	0.734	0.999	0.803	0.838	1.000	0.640	0.681	0.999
Clusters	6298	6298	6280	5965	5959	5897	6097	6097	6068
Observations	411303	411304	410288	166714	166625	164171	244559	244462	242476

Note: This table shows the results of the tests of parallel trends for property prices, conditional on the set of covariates, year FE and different neighborhood FE specifications. The explanatory variable of main interest is a dummy WithinBID_i that is equal to 1 for properties in treated postcode units, interacted with a dummy $Time_k$ with $k \in \{-5, \ldots, -1\}$, equal to 1 for each period before BID opening. Results are shown for each sample (composite, terraced houses and flats only) from the postcode sector FE, block group FE and block-BID trends specification, respectively. F-statistics of joint significance of the coefficients and p-values are also reported. Standard errors clustered at the census tract-year level are displayed in parentheses.

Table C2: Parallel trends test on new-building property sales

	Composite sample			**Terraced houses**			**Flats**		
	(1) Postcode sector FE	(2) Block group FE	(3) Block-BID trends	(4) Postcode sector FE	(5) Block group FE	(6) Block-BID trends	(7) Postcode sector FE	(8) Block group FE	(9) Block-BID trends
$\text{WithinBID}_i * \text{Time}_{-5}$ (reference period)									
$\text{WithinBID}_i * \text{Time}_{-4}$	0.026	0.029	0.034	0.034	0.032**	0.026**	0.021	0.026	0.033
	(0.036)	(0.033)	(0.024)	(0.032)	(0.015)	(0.011)	(0.042)	(0.040)	(0.029)
$\text{WithinBID}_i * \text{Time}_{-3}$	0.039	0.027	0.019	-0.014	-0.001	0.003	0.044	0.032	0.020
	(0.039)	(0.034)	(0.024)	(0.018)	(0.013)	(0.011)	(0.044)	(0.040)	(0.028)
$\text{WithinBID}_i * \text{Time}_{-2}$	0.011	0.005	0.011	-0.020	-0.002	-0.003	0.013	0.011	0.018
	(0.039)	(0.033)	(0.022)	(0.018)	(0.011)	(0.010)	(0.044)	(0.039)	(0.026)
$\text{WithinBID}_i * \text{Time}_{-1}$	0.061	0.048	0.039	-0.001	0.004	0.005	0.061	0.052	0.041
	(0.042)	(0.034)	(0.024)	(0.018)	(0.012)	(0.010)	(0.047)	(0.040)	(0.028)
Covariates	✓	✓	✓	✓	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓	✓	✓	✓	✓
F-stat	0.646	0.773	0.915	1.520	1.935	1.965	0.578	0.564	0.600
p-value	0.630	0.542	0.454	0.193	0.102	0.097	0.679	0.689	0.662
R2	0.254	0.397	0.599	0.179	0.360	0.542	0.270	0.420	0.638
Clusters	6298	6298	6280	5965	5959	5897	6097	6097	6068
Observations	411303	411304	410288	166714	166625	164171	244559	244462	242476

Note: This table shows the results of the tests of parallel trends for the share of new-building property sales, conditional on the set of covariates, year FE and different neighborhood FE specifications. The explanatory variable of main interest is a dummy WithinBID_i that is equal to 1 for properties in treated postcode units, interacted with a dummy $Time_k$ with $k \in \{-5, \ldots, -1\}$, equal to 1 for each period before BID opening. Results are shown for each sample (composite, terraced houses and flats only) from the postcode sector FE, block group FE and block-BID trends specification, respectively. F-statistics of joint significance of the coefficients and p-values are also reported. Standard errors clustered at the census tract-year level are displayed in parentheses.

Table C3: Effect of BIDs on property price

	(1) Postcode sector FE	(2) Census tract FE	(3) Block group FE	(4) Block FE	(5) Block-BID trends
(a) **Composite sample**					
$\text{WithinBID}_i * \text{PostBID}_t$	0.020	0.041**	0.031**	0.021**	0.021**
	(0.017)	(0.018)	(0.013)	(0.011)	(0.011)
Covariates	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Baseline Price (treated)	486475	486708	486708	486758	486791
Clusters	11041	11041	11041	11039	11035
Observations	757977	757991	757985	757524	757392
(b) **Terraced houses**					
$\text{WithinBID}_i * \text{PostBID}_t$	0.039*	0.029	0.034**	0.041***	0.039***
	(0.022)	(0.020)	(0.016)	(0.014)	(0.014)
Covariates	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Baseline Price (treated)	743809	746296	746496	745601	745811
Clusters	10605	10614	10604	10582	10569
Observations	287443	287478	287409	285720	285536
(c) **Flats**					
$\text{WithinBID}_i * \text{PostBID}_t$	0.019	0.039**	0.032**	0.020*	0.020*
	(0.018)	(0.019)	(0.014)	(0.012)	(0.012)
Covariates	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Baseline Price (treated)	437447	437432	437432	437246	437278
Clusters	10837	10837	10837	10831	10828
Observations	470504	470513	470458	469231	469097

Note: This table shows the effect of BID openings on property price for the composite sample of terraced houses and flats (panel (a)) and subsamples of terraced houses and flats (panel (b) and (c), respectively), as in equation (1), according to different neighborhood FE specifications. The explanatory variable of main interest is a dummy WithinBID_i that is equal to 1 for treated postcodes, interacted with a dummy PostBID_t equal to 1 for the period since BID opening. The regressions in panel (a) include a dummy for terraced houses. All regressions include on the right-hand side WithinBID_i, the whole set of covariates and year FE. Standard errors clustered at the census tract-year level are displayed in parentheses.

Table C4: Effect of BIDs on share of of new-building property sales

	(1) Postcode sector FE	(2) Census tract FE	(3) Block group FE	(4) Block FE	(5) Block-BID trends
(a) **Composite sample**					
$\text{WithinBID}_i * \text{PostBID}_t$	0.069***	0.086***	0.080***	0.034**	0.032**
	(0.022)	(0.024)	(0.019)	(0.013)	(0.013)
Covariates	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Baseline Sales (treated)	0.194	0.194	0.194	0.194	0.194
Clusters	11041	11041	11041	11039	11035
Observations	757977	757991	757985	757524	757392
(b) **Terraced houses**					
$\text{WithinBID}_i * \text{PostBID}_t$	0.015	0.017	0.019***	0.017***	0.017***
	(0.011)	(0.011)	(0.007)	(0.006)	(0.006)
Covariates	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Baseline Sales (treated)	0.024	0.024	0.024	0.025	0.025
Clusters	10605	10614	10604	10582	10569
Observations	287443	287478	287409	285720	285536
(c) **Flats**					
$\text{WithinBID}_i * \text{PostBID}_t$	0.069***	0.090***	0.090***	0.043***	0.042***
	(0.025)	(0.026)	(0.021)	(0.016)	(0.016)
Covariates	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Baseline Sales (treated)	0.226	0.226	0.226	0.226	0.226
Clusters	10837	10837	10837	10831	10828
Observations	470504	470513	470458	469231	469097

Note: This table shows the effect of BID openings on the share of new-building property sales for the composite sample of terraced houses and flats (panel (a)) and subsamples of terraced houses and flats (panel (b) and (c), respectively), as in equation (1), according to different neighborhood FE specifications. The explanatory variable of main interest is a dummy WithinBID_i that is equal to 1 for treated postcodes, interacted with a dummy PostBID_t equal to 1 for the period since BID opening. The regressions in panel (a) include a dummy for terraced houses. All regressions include on the right-hand side WithinBID_i, the whole set of covariates and year FE. Standard errors clustered at the census tract-year level are displayed in parentheses.

Appendix D - Full time horizon

Table D1: Effect of BIDs on property price

	(1) Postcode sector FE	(2) Census tract FE	(3) Block group FE	(4) Block FE	(5) Block-BID trends
(a) **Composite sample**					
$\text{WithinBID}_i * \text{PostBID}_t$	0.046***	0.063***	0.055***	0.033***	0.033***
	(0.015)	(0.017)	(0.014)	(0.011)	(0.011)
Covariates	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Baseline Price (treated)	507694	507949	507949	507983	507996
Clusters	4353	4350	4350	4349	4349
Observations	233981	233990	233985	233907	233885
(b) **Terraced houses**					
$\text{WithinBID}_i * \text{PostBID}_t$	0.071***	0.056***	0.066***	0.070***	0.069***
	(0.020)	(0.020)	(0.016)	(0.014)	(0.014)
Covariates	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Baseline Price (treated)	777660	779792	779999	778717	778953
Clusters	3883	3885	3878	3866	3865
Observations	58508	58536	58498	58100	58070
(c) **Flats**					
$\text{WithinBID}_i * \text{PostBID}_t$	0.037**	0.052***	0.048***	0.024*	0.025*
	(0.017)	(0.018)	(0.015)	(0.013)	(0.013)
Covariates	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Baseline Price (treated)	456356	456346	456346	456102	456113
Clusters	4139	4138	4136	4133	4133
Observations	175437	175448	175438	175271	175244

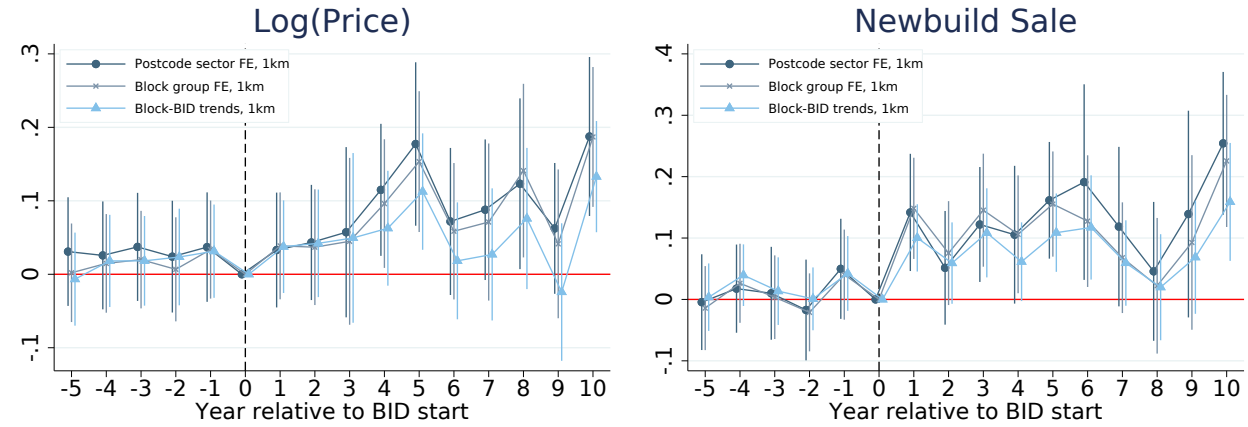
Note: This table shows the effect of BID openings on property price for the composite sample of terraced houses and flats (panel (a)) and subsamples of terraced houses and flats (panel (b) and (c), respectively), as in equation (1), according to different neighborhood FE specifications. The explanatory variable of main interest is a dummy WithinBID_i that is equal to 1 for treated postcodes, interacted with a dummy PostBID_t equal to 1 for the period since BID opening. The regressions in panel (a) include a dummy for terraced houses. All regressions include on the right-hand side WithinBID_i, the whole set of covariates and year FE. Standard errors clustered at the census tract-year level are displayed in parentheses.

Table D2: Effect of BIDs on share of new-building property sales

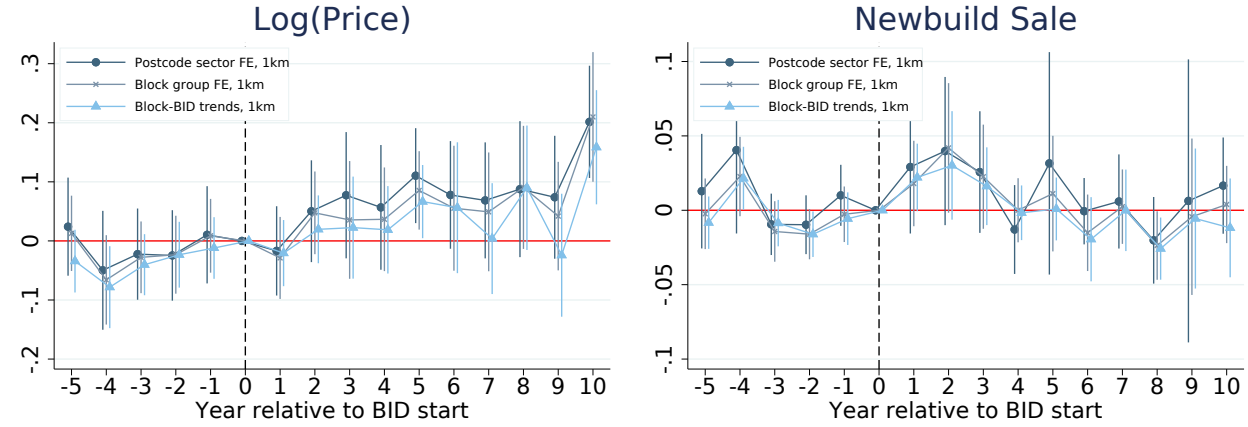
	(1) Postcode sector FE	(2) Census tract FE	(3) Block group FE	(4) Block FE	(5) Block-BID trends
(a) **Composite sample**					
$\text{WithinBID}_i * \text{PostBID}_t$	0.107***	0.109***	0.101***	0.057***	0.056***
	(0.020)	(0.022)	(0.017)	(0.014)	(0.014)
Covariates	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Baseline Sales (treated)	0.194	0.194	0.194	0.194	0.194
Clusters	4353	4350	4350	4349	4349
Observations	233981	233990	233985	233907	233885
(b) **Terraced houses**					
$\text{WithinBID}_i * \text{PostBID}_t$	0.006	0.009	0.011*	0.008	0.008
	(0.009)	(0.009)	(0.007)	(0.005)	(0.005)
Covariates	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Baseline Sales (treated)	0.024	0.024	0.024	0.025	0.025
Clusters	3883	3885	3878	3866	3865
Observations	58508	58536	58498	58100	58070
(c) **Flats**					
$\text{WithinBID}_i * \text{PostBID}_t$	0.115***	0.113***	0.108***	0.067***	0.067***
	(0.023)	(0.024)	(0.019)	(0.016)	(0.016)
Covariates	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Baseline Sales (treated)	0.024	0.024	0.024	0.025	0.025
Clusters	4139	4138	4136	4133	4133
Observations	175437	175448	175438	175271	175244

Note: This table shows the effect of BID openings on the share of new-building property sales for the composite sample of terraced houses and flats (panel (a)) and subsamples of terraced houses and flats (panel (b) and (c), respectively), as in equation (1), according to different neighborhood FE specifications. The explanatory variable of main interest is a dummy WithinBID_i that is equal to 1 for treated postcodes, interacted with a dummy PostBID_t equal to 1 for the period since BID opening. The regressions in panel (a) include a dummy for terraced houses. All regressions include on the right-hand side WithinBID_i, the whole set of covariates and year FE. Standard errors clustered at the census tract-year level are displayed in parentheses.

(a) Composite sample



(b) Terraced



(c) Flats

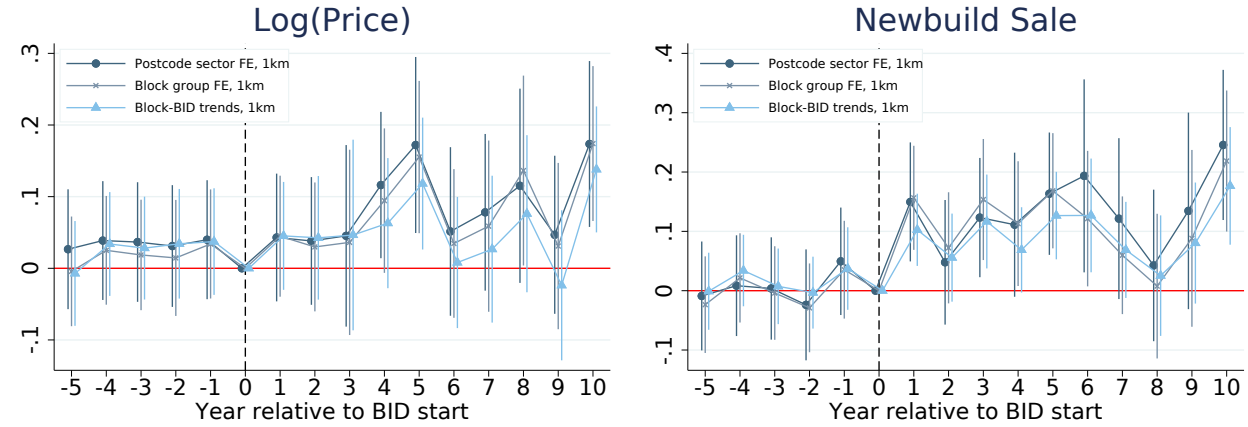
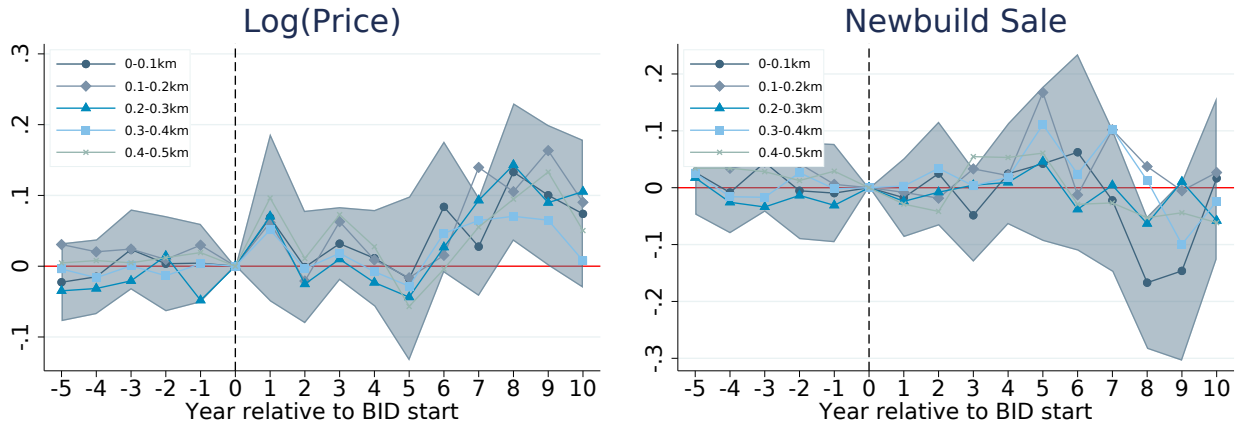
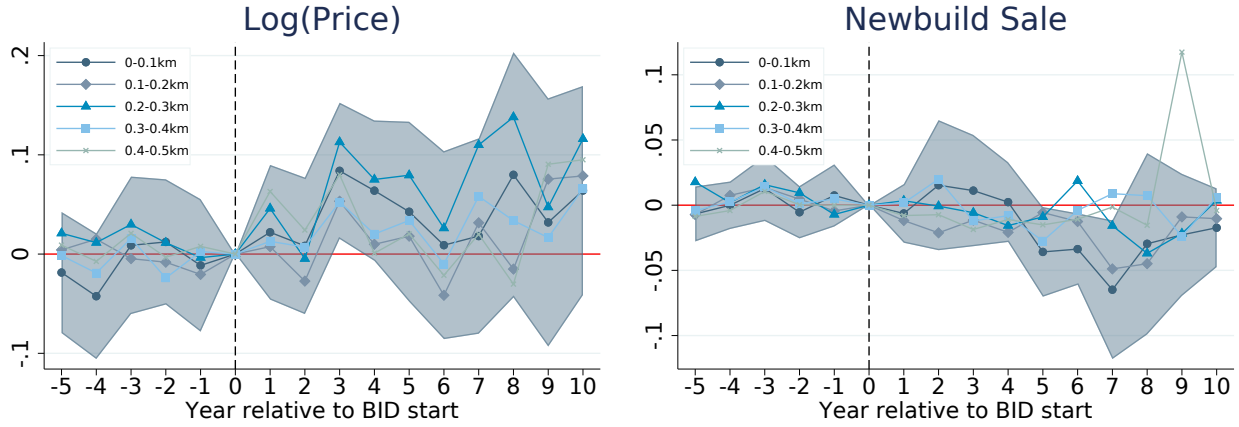


Figure D1: Effect of BID opening on property price and share of new-building property sales.
Notes: This figure shows the effects of BID openings on property (log) prices and share of new-building property sales as estimated from the difference-in-differences equation (2) - along with 95% confidence intervals constructed with standard errors clustered at census tract-year level.

(a) Composite sample



(b) Terraced



(c) Flats

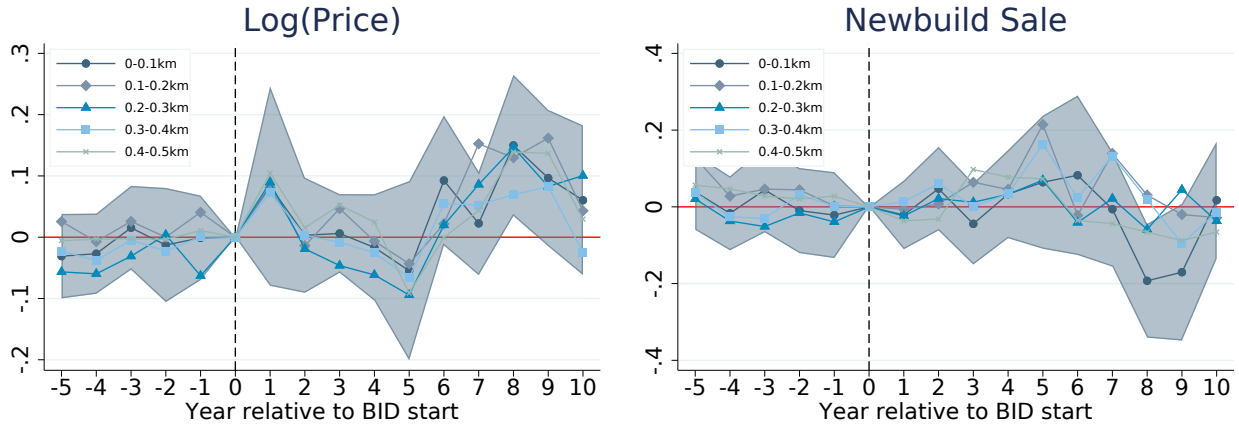


Figure D2: Effect of BID opening on property price and share of new-building sales within the control group. Notes: This figure reports coefficients δ_{rt} from the difference-in-differences equation (3) with block-BID trends for each concentric 100m ring within 500m of a BID. The shaded area refers to the 95% confidence interval of the first ring (0-100m).