Journal of Urban Economics 107 (2018) 65–78

Contents lists available at ScienceDirect

Journal of Urban Economics

journal homepage: www.elsevier.com/locate/jue

Land-use regulations, property values, and rents: Decomposing the effects of the California Coastal Act☆

Christopher Severen[a], Andrew J. Plantinga[b,*]

[a] Federal Reserve Bank of Philadelphia, USA
[b] Bren School of Environmental Science & Management, University of California, Santa Barbara, USA

ARTICLE INFO

JEL classification:
Q24
R31
R52

Keywords:
Land use regulation
Housing prices
Spillovers
California Coastal Commission
Quasi-experiment
Spatial difference-in-differences
Spatial regression discontinuity

ABSTRACT

Land-use regulations can lower real estate prices by imposing costs on property owners, but may raise prices by restricting supply and generating amenities. We study the effects of the California Coastal Act, one of the nation's most stringent land-use regulations, on the price and rental income of multifamily housing. The Coastal Act applies to a narrow section of the California coast, allowing us to compare properties just on either side of the jurisdictional boundary. The setting is advantageous for the study of land-use regulation: boundary location is plausibly exogenous, which we confirm with historical data on boundary placement, and orthogonal to other jurisdictional divisions. We decompose the effects of the regulation into (i) a *neighbor effect*, the value of restrictions on adjacent properties, (ii) a *local effect*, which reflects the net effect of own-lot restrictions and the neighbor effect, and (iii) an *external effect*, the value of amenities generated by restrictions on all properties within the regulated area. Our analysis of multifamily housing prices reveals local and external effects of approximately +6% and +13%, respectively. We use data on rental income to estimate a zero neighbor effect. Together with evidence on building ages and assessed building and land values, this suggests that property owners anticipate that the Coastal Act will provide protection from undesirable development on adjacent properties, even though material differences have not yet appeared.

1. Introduction

The California Coastal Act, passed in 1976 and administered by the 12-member California Coastal Commission, regulates land use and coastal access along the California coast. Although the Coastal Act applies to only about 1% of land in California, the Coastal Commission has authority over some of the most valuable real estate in the world, including sections of La Jolla, Santa Monica, Malibu, and Carmel-by-the-Sea. Among other objectives, the Coastal Act is designed to "protect, maintain, and where feasible, enhance and restore the overall quality of the coastal zone environment and its natural and artificial resources."[1] To achieve this ambitious goal, the Coastal Commission is granted permitting authority over a wide range of activities affecting land resources, the marine environment, recreation, and public access, and can levy fines and seek punitive damages. The Coastal Act has the potential to generate substantial benefits for property owners within the regulated area, referred to as the Coastal Zone, but it may also impose significant costs. Development in the Coastal Zone is subject to approval by the Coastal Commission, which can result in delays and significant modifications of proposed projects.[2]

[2] The added costs of development in the Coastal Zone are evidenced by the highly publicized case of David Evans (also known as the Edge), the guitarist for U2. After five years of controversial hearings and significant changes to the development plan, the Coastal Commission recently granted approval to Evans's plan to build houses on a ridge in Malibu ("U2's the Edge gets state approval to

☆ We thank Jon Van Coops, Greg Benoit, and Darryl Rance at the California Coastal Commission for facilitating our GIS work and providing institutional history and detail. The UCSB Map & Imagery Laboratory has been helpful for historical map work, and Amy Stuyvesant provided excellent research assistance. Comments from anonymous referees have been useful in shaping this paper. We have received valuable feedback from Serena Canaan, Olivier Deschênes, Bryan Leonard, Kyle Meng, Trevor O'Grady, Paulina Oliva, and participants in the 2015 NBER Environmental and Energy Economics Summer Institute, the 2015 Association of Environmental and Resource Economists Summer Conference, the UCSB Environmental Lunch, and a seminar at the Institut National de la Recherche Agronomique in Dijon, France. The views expressed in this paper are those of the authors and do not necessarily reflect those of the Federal Reserve Bank of Philadelphia or the Federal Reserve System.

* Corresponding author.
E-mail address: plantinga@bren.ucsb.edu (A.J. Plantinga).

[1] California Public Resources Code 30001.5(a).

https://doi.org/10.1016/j.jue.2018.07.001
Received 27 June 2016; Received in revised form 16 July 2018
Available online 17 August 2018

Our study provides new results on the benefits and costs of one of the nation's most stringent and important land-use regulations. We use sale price and rental income data on multifamily housing units in Southern California to estimate the effects of the Coastal Act on property values. Our approach exploits the sharp discontinuity in regulatory regime provided by the Coastal Commission jurisdictional boundary, referred to as the Coastal Zone Boundary (CZB). We identify multiple effects of the Coastal Act operating at different spatial scales. The first, which we refer to as a *local effect*, captures the net price change due to restrictions on the subject property and restrictions on immediate neighbors of the subject property. The Coastal Act requires property owners to inform their neighbors of planned alterations to their property and provides neighbors with a mechanism for protesting these changes. This process imposes a cost on property owners (an *own-lot effect*) but also protects them from actions that their immediate neighbors may pursue (a *neighbor effect*). The local effect reflects both the own-lot and neighbor effects and can be negative or positive. We estimate the local effect by comparing sale prices for multifamily housing units just on either side of the CZB. Data on rental income are used to isolate the neighbor effect. In a competitive market, landlords must charge the same rent for identical apartments just on either side of the CZB. Rental market competition implies landlords just inside the Coastal Zone cannot pass along the costs of complying with the Coastal Act to renters, allowing us to separate the current neighbor effect from the local effect on prices.[3]

The Coastal Act also generates an *external effect*, the price change due to amenities resulting from the regulation of all properties within the Coastal Zone. For example, development restrictions that reduce congestion and loss of open space provide benefits to all property owners within the Coastal Zone.[4] The external effects of the regulation operate at a larger spatial scale than the local effects. We estimate the external effect by comparing price differences for multifamily units in the interior of the regulated and unregulated zones. We develop a novel spatial variant of difference-in-differences estimation to address endogeneity, as well as a plausible check on identifying assumptions that is similar to the test of parallel pre-trends. We also estimate the spillover of the external effect from the regulated to the unregulated zone, which we refer to as the *partial external effect*, by comparing properties in the interior of the unregulated area to those along the CZB but still within the unregulated zone.

We find that the Coastal Act has a local effect on prices of approximately +6%, revealing that the neighbor effect of the regulation outweighs the own-lot effect. The external effect of the Coastal Act on prices is found to range from +8% to +17%. Estimates produced with rent data reveal a similar external effect (approximately +9%), however, the neighbor effect of the Coastal Act on current rent is zero. These findings suggest that the neighbor effects of the regulation have not yet materialized but are expected to in the future, and highlight the importance of dynamic considerations when studying land-use regulation.

Previous studies on the effects of land-use regulations on real estate markets

There is a large empirical literature on the effects of land-use regulations on markets for housing and land. Quigley and Rosenthal (2005) provide a review of the literature, noting that many early studies ignore the potential endogeneity of land-use regulations. More recent analyses address this potential problem using instrumental variables or quasi-experimental methods (Cunningham, 2007; Ihlanfeldt, 2007; McMillen and McDonald, 2002; Saiz, 2010; Zhou et al., 2008). Our study builds on a recent paper by Turner et al. (2014) who use a regression discontinuity design (RDD) to decompose the effect of regulation on property prices into own-lot, external, and supply effects. They compare parcels subject to differing degrees of regulatory stringency, as measured by the Wharton Residential Land Use Regulation Index (Gyourko et al., 2008).[5] Although most earlier studies examine effects on prices, land-use regulations also have the potential to affect urban form (Shertzer et al., 2018), aggregate growth (Parkhomenko, 2016), and regional convergence (Ganong and Shoag, 2017).

A second group of studies focuses on the effects of spatially delineated regulations such as urban growth boundaries (UGB). These studies avoid the challenge of measuring the intensity of regulation with summary measures such as the WRLURI in favor of examining discrete changes in particular regulations.[6] Grout et al. (2011) use an RDD to study the effects of Portland's UGB on property values. Cunningham (2007) and Dempsey and Plantinga (2013) use a difference-in-differences approach to estimate the effects of UGBs on land development rates. Similar to our study, Kahn et al. (2010) use an RDD to estimate the effects of Coastal Act regulations on housing prices, household income, housing units, and population density. In an earlier study of the Coastal Act, Frech and Lafferty (1984) use housing price data from before and after the Coastal Commission began operating to measure its effect on the real estate market. They find small positive price effects of the Coastal Act, even in areas outside the Coastal Zone, which they attribute to supply constraints on the housing market.

Distinguishing features of this study

Our study is closest to previous RDD analyses of land-use regulations by Kahn et al. (2010) and Turner et al. (2014). Although our study draws on Turner et al. (2014), we extend their analysis in several ways. First, we show that what Turner et al. (2014) call the own-lot effect is better characterized as a local effect that measures both the net price change due to restrictions on the subject property (a true own-lot effect) and restrictions on immediate neighbors of the subject property (a neighbor effect). Second, by analyzing price and rental income data, we distinguish effects of regulation on current rents from anticipated effects on future rents. Third, we develop a quasi-experimental identification strategy to estimate the total effect of regulation that relies on spatial difference-in-differences, rather than simple differences as in Turner et al. (2014). Finally, we develop a combined estimator that jointly estimates local and external effects, limiting the loss of power that results from separate estimation and additionally recovers the amenity spillover from the regulated to the unregulated zone (the partial external effect). Our estimate of the total effect of regulation is similar to the estimate for single-family house prices reported in Kahn et al. (2010), however, we rigorously decompose this effect into its various components, provide an enhanced approach to identification, and distinguish current and future effects of the regulation.

The Coastal Act offers several unique advantages for measuring the effects of land-use regulations relative to other settings, and warrants extensive study. First, we make a strong case for the exogeneity of the boundary location. Previous studies of UGBs can be criticized on the

build controversial homes on a Malibu ridge," *Los Angeles Times*, December 10, 2015).

[3] The own-lot effect can raise the equilibrium *level* of the rent if it restricts the supply of housing units inside the regulated area. However, all housing units in the same market, whether regulated or not, would be affected in the same way, implying that *differences* in equilibrium rents cannot be due to the own-lot effect.

[4] The external effect is positive in this example, but it need not be. A poorly designed regulation could produce disamenities within the regulated area that have a negative effect on property prices.

[5] The WRLURI is a municipality-level index that summarizes survey results on the parties involved in the regulatory process, local rules for residential development, and effects of the regulatory process.

[6] To account for the heterogeneity of regulation, indices like the WRLURI measure the average stringency within a municipality, but include some factors that may not be uniformly applied within a jurisdiction, such as minimum lot size requirements. In addition, the WRLURI incorporates information on the rate of land price appreciation within the municipality, which is an outcome of regulation rather than an indicator of stringency. Turner et al. (2014) explore the use of measures created from the eleven subindexes that comprise the WRLURI.