



## Does zoning follow highways? ☆

Miquel-Àngel Garcia-López <sup>a,\*</sup>, Albert Solé-Ollé <sup>b</sup>, Elisabet Viladecans-Marsal <sup>b</sup>

<sup>a</sup> Universitat Autònoma de Barcelona & Institut d'Economia de Barcelona, Spain

<sup>b</sup> Universitat de Barcelona & Institut d'Economia de Barcelona, Spain



### ARTICLE INFO

#### Article history:

Received 14 February 2014

Received in revised form 23 February 2015

Accepted 18 May 2015

Available online 9 June 2015

#### JEL Classification:

R4

R52

O2

#### Keywords:

Zoning

Highways

Urban land increase

### ABSTRACT

We study whether local zoning policies are modified in response to demand shocks generated by new highways. We focus on the case of Spain during the period 1995–2007. The empirical strategy compares the variation in the amount of developable land before–after the construction of the highway in treated municipalities and in control municipalities with similar pre-treatment traits. Our results show that, following the construction of a highway, municipalities converted a huge amount of land from rural to urban uses. The amount of new land declared to be developable was larger in places with low construction costs or high demand, suggesting that zoning follows market forces. However, the impact of the highway was lower in places where residents were less favorable to development or where developers had more influence over zoning policies. Local political factors thus impede the full adaptation of zoning to economic changes.

© 2015 Elsevier B.V. All rights reserved.

## 1. Introduction

Land use regulation is a ubiquitous feature of land markets. Urban growth boundaries place limits on the spatial expansion of cities (Hannah et al., 1993), and zoning ordinances designate permitted uses of land and regulate many other aspects of development (Glickfeld and Levine, 1992; Cheshire and Sheppard, 2004). The effect of these regulations on welfare is difficult to determine, although there is little evidence of a net positive effect (McMillen and McDonald, 1993; Turner et al., 2014). Some authors even suggest that 'the regulations tend to coincide with, or anticipate, the market solution rather than modify it' (Wallace, 1988, p.307). If we accept that 'zoning follows the market', regulations would be unnecessary as governments would provide the same land use patterns as those afforded by the unconstrained market. Such a situation might come about as private agreements tend to mimic centralized decisions dealing with externalities (Fischel, 1985). It might also be the case that local governments cater in the main to development-related interests as opposed to those of homeowners

(Molotch, 1976; Solé-Ollé and Viladecans-Marsal, 2012; Hilber and Robert-Nicoud, 2013). So, eventually, when obliged to modify their planning documents, they tend to take decisions that allow proposed developments to go ahead. From this perspective, not only are land use regulations meaningless, they are also likely to have a detrimental effect. This is the case if a government's response to market forces is delayed, thereby reducing the supply elasticity of residential land and contributing to housing price increases (Mayer and Somerville, 2000; Glaeser and Ward, 2006).

In this paper, we examine whether zoning policies do indeed follow market forces by studying whether local governments respond to demand shocks by allowing more land to be developed. More specifically, we study the decisions of Spanish local governments to convert land from rural to urban uses during the period 1995–2007. We focus on a specific kind of demand shock—the construction of a new highway segment—and study its impact on the growth in the amount of land designated for development, taking into account the timing of any effects. We then analyze whether these effects are heterogeneous, considering (i) the strength of the demand shock, (ii) geographical constraints, (iii) the amount of vacant land, (iv) the degree of local support/opposition to development, and (v) the degree of influence developers have over zoning policies.

The paper makes two main contributions to the literature. First, to the best of our knowledge, no one has previously analyzed the way in which local governments make zoning decisions following a demand shock. Some authors have studied whether the *ex post* land use pattern is consistent with that which would have been generated by market

☆ We gratefully acknowledge the helpful comments of the conference participants at the 2013 Urban Economic Association Meeting in Atlanta. This research has received financial support from Pasqual Maragall Chair Research Grant (2013), the research projects ECO2014-52999-R, ECO2013-41310-R and ECO2012-37131 (Ministry of Education) and 2014SGR1326 and 2014SGR420 (Generalitat de Catalunya). Any remaining errors are solely ours.

\* Corresponding author at: Department of Applied Economics, Universitat Autònoma de Barcelona, Edifici B Facultat d'Economia i Empresa, 08193 Cerdanyola del Vallès, Spain.

E-mail addresses: [miquelangel.garcia@uab.cat](mailto:miquelangel.garcia@uab.cat) (M.-À. Garcia-López), [asole@ub.edu](mailto:asole@ub.edu) (A. Solé-Ollé), [eviladecans@ub.edu](mailto:eviladecans@ub.edu) (E. Viladecans-Marsal).

forces (Wallace, 1988; McMillen and McDonald, 1993; Turner et al., 2014), but none specifically analyze how local governments modify their decisions in response to changes in market conditions over time. The cross-sectional nature of most databases employed in the literature examining the determinants of zoning (Bates and Santerre, 1994, 2001; Evenson and Wheaton, 2003; Sáiz, 2010) does not permit a dynamic analysis like the one we perform here. In this paper, we are able to draw relevant conclusions as to whether (and the conditions under which) zoning decisions anticipate market forces and about the time required for this to happen. Second, although there is a growing body of literature documenting the effects of highways on city growth and urban sprawl (Baum-Snow, 2007; Durantón and Turner, 2012; Baum-Snow et al., 2014; García-López, 2012; García-López et al., 2015), these studies do not consider the possibility that the impact of highways on the local economy might be mediated by the way in which local zoning policies are drawn up. It is perhaps tempting to interpret the results of this literature as indicating that zoning does not interfere greatly with market forces, since on average such regulations are unable to stop highways from having a considerable impact on the local economy. Here, however, we argue that behind this average effect of highways, there might lie considerable heterogeneity and that the effect on a specific community may well depend on local preferences and political traits. Even if zoning completely responds to highways in the long run, it might be that this response comes with a substantial delay, thus slowing the path of real development and fuelling increases in real estate prices. In this paper, we explore this issue by comparing the time path of zoning modifications and that of real development outcomes.

There are various reasons why Spanish local governments provide an excellent testing ground for these ideas. First, they are periodically required to pass comprehensive zoning documents, specifying which land plots can be developed and which have to remain undeveloped. We have been fortunate in being able to access a unique database containing information on the amount of land designated for development by all of Spain's municipalities over a long time period. Second, the fact that Spanish local governments enjoy almost complete freedom in areas related to zoning policies, coupled with the fact that highway provision is the exclusive concern of higher layers of government, makes Spain the ideal institutional setting for our analysis. Finally, the period analyzed (1995–2007) witnessed a demand shock of an extraordinary magnitude, creating extremely high expectations of construction growth, which forced local governments to take decisions regarding whether or not to allow this growth.

Our results show that, following the construction of a new highway segment, the municipalities converted a huge amount of land from rural to urban uses. We can confirm that the amount of land converted was greater in places with higher demand and fewer geographic constraints, which suggests that zoning does indeed follow market forces. However, land conversion was also greater in places where local residents were more favorable to development and/or in places where development interests had more influence over the local planning process, which suggests that local preferences and political factors impede the full adaptation of zoning to economic changes. Furthermore, we show that these effects are also present when we analyze the effects of highways on the amount of land actually developed and on the number of housing units built.

The paper is organized as follows. In Section 2, we describe the system of zoning in Spain and the recent expansion of the Spanish highway network. Section 3 describes the methodology used in the analysis, and Section 4 presents the results. Finally, Section 5 concludes.

## 2. Institutions and data

### 2.1. Zoning regulations

Responsibility for specifying and implementing zoning regulations in Spain lies with the more than 8,000 municipalities (though most

are small, with 60% having less than 1,000 inhabitants). And even though Spain's regional governments can reject local zoning regulations on the grounds that they interfere with their policies, it is generally held that during the last economic boom, the regional governments were largely ineffective in detaining local land development. Moreover, regional governments are powerless to force local governments to accept either the quantity or the type of development they want.

Zoning regulations in Spain are controlled by a highly detailed, rigid system (Riera et al., 1991), an essential characteristic given that land-owners cannot develop their land without the prior consent of the local administration. Municipalities draw up a 'General Plan', which provides a three-way land classification: *developed land*, *developable land* (areas where future development is allowed), and *non-developable land* (areas where development is prohibited, at least until a new plan is approved). The 'General Plan' has to be updated from time to time in order to adapt land use regulations to economic and demographic changes. The process of amending the 'General Plan' is complex and can take at least a full term of office to complete. The plan, drawn up by the government team, has to be approved by a majority of the city council. Many transparency and participation requirements have to be fulfilled (public display or hearings, appeals), involving both opposition parties and the citizenry. Fortunately, for our purposes, we enjoyed access to a new dataset that provides information on land use categories at the municipal level (Spanish Property Assessment Agency, Ministry of Economics) and which is derived from the assessment process that this agency undertakes on all properties in the country. From this database, we obtain information on the amount of *developable land* and of *developed land*, as well as a proxy of residential development (the number of *housing units*). Our empirical analysis focuses on the evolution of the amount of *developable land* from 1995 to 2007, which increased considerably during this period (thus, between 1995 and 1999, there was a marked rise equivalent to 28.6% of the build-out area in 1995; this figure jumped to 73.3% by 2003 and to 113.5% by 2007).

### 2.2. Highway construction

Over the last three decades, Spain has undertaken a highly ambitious expansion of its highway network; thus, between 1980 and 2011, more than 10,000 km of new highways were built. However, the period from 2003 to 2007 saw the greatest number of kilometers of new highways built per year (with an overall total of 2,446 km). Both the central and the regional governments have responsibilities over road construction, but during the period of analysis, most highways have been built by the central government (80% of segments and 90% of km). Thus, in effect, the paper analyzes the reaction of the zoning enacted by local governments to the highways constructed by higher tiers of government.

Using GIS software, we created digital vector maps (highway and other main road segments) and associated them with the municipalities. The network is characterized, first and foremost, by its highly radial pattern whereby many highways emanate from Madrid, the geographical center of Spain; and, second, while construction work up to 2000 strengthened this radial network, subsequently, a mesh-like structure has been created with direct connections being built between Spain's medium-sized cities but without crossing Madrid.<sup>1</sup>

## 3. Empirical analysis

### 3.1. Identification strategy

One of the most challenging problems researchers face when evaluating the effects of road construction on economic outcomes is that places that gain access to a new road probably differ from places that

<sup>1</sup> Good examples are segments of the A-66 highway running North-South parallel to the Portuguese border (the 'Autovía de la Plata') and the A-23 highway in the North-East of Spain, linking Zaragoza and Teruel.

Download English Version:

<https://daneshyari.com/en/article/983255>

Download Persian Version:

<https://daneshyari.com/article/983255>

[Daneshyari.com](https://daneshyari.com)