Specifications

The purpose of our analysis is to study empirically the effects of the house prices on the proportion of care homes in local long term care markets. The main analysis is based on regressions that follow the baseline specification:

$$C_{it} = \beta X_{it} + \alpha P_{it} + \epsilon_{it} \tag{1}$$

where C is proportion of care homes per 1000 population over 65 in a local authority i in a time period t, P_{it} is the average of the house prices and and ϵ represents an error term that is identically and independtly distributed. X_{it} represents a vector with different observable variables that characterize the composition of local long term care markets and that we use as main controls in some of our specifications.

The choice of these controls is guided by elements that characterize the composition of the demand for long term care and its needs. Firstly, we include the proportion of people older than 85 and proportion of people that receive the attendance allowance[1] as proxies of the level of health dependency. Also, given the association between the financial needs and the funding support determined by the means-test, we incorporate the proportion of people that receive some sort of income support and the proportion of people that receive pension credits to reflect the payer composition within the local population. These variables have been previously used in the literature for these purposes (Darton et al., 2010; Forder and Allan, 2014). Likewise, given that long term care is a labour intense activity, we add the proportion of females that claim for job seekers' allowance in order to get a proxy for unemployment.

[1] This benefit aims to support those people with physical disabilities in UK that live independently and might require residential care services otherwise.

In addition to the former, we also include in X a measure of the Herfindahl–Hirschman Index (HHI) to control for the competition between care homes in the local market. In our case, the HHI is a measure of concentration that reflects the squared shares of beds across all the providers in a local market. The values range from 0 to 1 where higher values represent higher concentration and therefore less competition.

The parameter of interest, α, may be interpreted as a causal effect of the house prices on the distribution of care homes, only if P_i is exogenous so that $Cov(P_i,\epsilon_i) = 0$. Yet, a potential element that can lead to inconsistent estimations of α may be the presence of unobserved variables that confound the effect of the house prices on the proportion of care homes.

For tackling with these problems we consider an instrumental variables approach and instrument the house prices with instruments referred to the variation of restrictiveness in the planning regulations. The measure that we use is the rate of refusal of major projects. It is normally used in the literature and reflects the share of applications corresponding to projects that entail 10 or more dwelling that are rejected by a local authority during a year.

A potential problem with this instrument is that is procyclical and this may entail endogeneity concerns. In order to address them we use two identification strategies based on the variation in the rate of delay of projects before and after a planning reform aimed at speeding up the planning processes and the share of local political power. The specific instruments that we use are the change in the delay rate before and after the reform and the share of Labour voters in the local authority.

In addition to the planning regulations, there may be other drivers that entail restrictions in the supply of houses and thus may lead to increases in the house prices. Physical constraints may be an example of those and should be included in the estimation. We use the share of developed land to express the extent of physical constraints. A potential limitation referred to this variable is that the availability (or scarcity) of this type of land can be the result of elements that also affect the house prices and therefore may imply endogeneity. For addressing this problem, the historic population density can be used as an instrument for identifying the share of developable land since it may show the early forms of agglomeration. I use the historic population density in 1911.

Considering these caveats specification for estimating the first stage fitted values of the

house prices is expressed

$$P_{it} = \delta Z_{it} + \beta \chi_{it} + \eta_i + \psi_i + u_{it} \tag{2}$$

where Z refers to the variable associated with the planning regulation (e.g. the rate of refusal of major projects), χ to the variable referred to the physical constraint (e.g. share of developed land) and ψ binary variables for each planning authority. In addition to the specification developed by Hilber and Vermeulen (2016), we include and additional control η corresponding to the share of Labour voters for each local authority in the last national election in June 2015.

1 Tables

Table 1: First stage results, dependent variable house prices (log)

	Average house price (log)		
	Refusal rate	Change rate of delay	Share votes of Labour
Population density			
	1.222***	-0.095	-1.672***
	(0.28)	(0.066)	(0.328)
Observations	945	945	945
R2	0.694	0.672	0.695
F (excluded instruments)	19.42***	2.07	46.32***

Notes: All regressions include the following controls. Share of people 85+, Share of people receiving Attendance Allowance, Share of people with pension credits, Share of females claiming for Job Seekers Allowance, Share of adults with income support, Herfindahl-Hirschmann Index, share of Labour voters for 2015. All regressions include fixed effect controls at county level. Robust standard errors in parentheses. Standard errors are clustered at local planning authority level. ***/**/*/$^+$ denote significance levels at 1%, 5%, 10% and 15%. Standard errors are presented in parentheses.

References

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