

Local land policy interventions and the elasticity of housing supply: the case of Finland

Extended abstract

A well-functioning regional housing market is essential for the residents' welfare and the entire regional economy. A desirable feature of housing markets is that the supply of housing can reasonably well meet the changes in demand. The magnitude and speed of supply adjustment to demand shocks depend on the responsiveness of housing supply, which is captured by the price elasticity of supply of housing. In areas with a more elastic housing supply, a demand shock leads to a greater growth in the quantity supplied and thereby to a smaller housing price increase. Through its effects on housing prices, the price elasticity of housing supply influences housing affordability, thereby having significant consequences for households. Moreover, the elasticity has been found to influence house price volatility, where areas with lower housing supply elasticities have experienced more pronounced fluctuations in housing prices (Oikarinen et al. 2018; Paciorek, 2013). Through its influence on housing prices and affordability, the supply elasticity has also been found to impact, for example, labor market flexibility and regional growth dynamics (Glaeser et al., 2006; Saiz, 2010).

Despite its profound implications on not only the urban housing market, but also the whole regional economy, there remains a lack of consensus and understanding of how the housing supply elasticity varies across regions (Ball et al., 2010; Malpezzi & Maclennan, 2001). This lack of agreement can be attributed partly to variations in data use and availability, as well as differences in estimation methods. For example, some studies employ reduced form estimation approaches, while others utilize more structural approaches. Moreover, the elasticity estimates are likely to differ significantly when comparing short-term housing market dynamics to long-term dynamics, for instance (Ball et al., 2010; Wheaton et al., 2014).

Nevertheless, it is widely acknowledged that the housing supply elasticities vary regionally both within and across countries. When focusing on the key determinants explaining these differences, extant studies highlight the role of demographic and locational characteristics, such as population size and urban density (Paciorek, 2013), as well as the scarcity of developable land due to factors such as widespread water bodies and topography (Oikarinen et al., 2015; Saiz, 2010). Several papers also argue that public interventions related to land use and housing development, i.e., land policy interventions such as land use regulations, play a pivotal role in shaping the housing supply responsiveness. Notably, regions with more restrictive regulatory systems have generally been found to exhibit lower housing supply elasticities (e.g., Glaeser et al., 2008; Oikarinen et al., 2015; Saiz, 2010).

The influence of land policy interventions in shaping housing supply responsiveness has received a growing interest in both academia and public discussion, and the research in this area has grown substantially since the early 2000s (Gyourko & Molloy, 2015). Despite the increased attention, there is still much that we do not understand. An often-highlighted complication in the empirical literature exploring the relationship between local land policy interventions and regional differences in housing supply elasticities pertains to the reliance on rather limited data and crude measures of land use regulations (Quigley & Rosenthal, 2005). Different types of public interventions may, however, have different effects on the supply elasticity. This makes it

challenging to interpret the estimated effects of aggregate measures. Moreover, the existing literature has mainly focused on the impact of land use-related restrictions and regulations, particularly in the contexts of the US and UK. Much less attention has been devoted to examining how different types of public interventions on land use and housing development are associated with housing supply elasticities in countries, where both the spatial planning and the land development process are strongly controlled by the local public authorities.

In this paper, we add to the literature by investigating the regional variation in long-run housing supply elasticity and its determinants in the context of Finland. Finland is a country with a statutory planning system where local public authorities also exert a strong influence in the land market by acquiring land, controlling the land development process, and acting as a main supplier of buildable land (Krigsholm et al., 2022). Therefore, the regulatory environment in the housing market substantially differs between Finland and the countries in which the relationship between public interventions and the supply elasticity has been extensively studied.

We conduct a two-step longitudinal and cross-sectional analysis. First, we estimate the long-run housing supply elasticities for 22 of the largest Finnish cities. Prior research has shown that housing markets are inherently local by nature and housing supply elasticity is to a large extent dependent on factors that appear at the local level rather than the national level (e.g., Meen & Nygaard, 2011; Oikarinen et al., 2015). Therefore, our empirical focus in this paper is on the local governmental level, i.e., the municipality level. Methodologically, the dependence of the overall housing stock on the housing price level is estimated directly by applying a panel estimation technique to quarterly data spanning from 1988Q1 to 2020Q4.

Given the properties of the data (times series of housing prices and housing stock), we apply the fully modified OLS (FMOLS) estimator proposed by Pedroni (2001) in the first-step analysis. The FMOLS estimator is super-consistent in the presence of non-stationary but cointegrated data, such as that used in the supply elasticity estimations in the first step. Moreover, given that the housing price level is expected to be endogenous with respect to housing stock, a benefit of the FMOLS estimator is that it is consistent even in the presence of such endogeneity (Pedroni, 2001, 2007).

In the second step, we use the elasticity estimates to conduct cross-sectional investigations to examine the factors explaining regional variations in supply elasticities. Of particular interest in this study is the role of public interventions in land use and housing development. For that purpose, we construct indices to measure the relative stringency of local land policy interventions that might constrain housing supply responsiveness. These indices are derived from a set of extensive interviews with land officials of Finnish municipalities. Following Gyourko et al. (2008, 2021), the observed variation in the application of different land policy interventions is collapsed into sub-indices describing the housing supply restrictiveness of different elements of the land policy environment. The sub-indices are further divided into two main categories. The first captures the time-related indirect costs induced by public interventions through delays and uncertainties in the planning and development process. The second pertains to the direct cost-effects induced by local land policy interventions, such as different fees, exactions, and building requirements, for example.

This study complements the work by Oikarinen et al. (2015), which examined the regional variation in supply elasticity and its determinants for 15 Finnish cities between 1987-2011. Our study distinguishes itself in several significant ways. Firstly, we provide empirical evidence on a more extensive sample of cities, providing a more comprehensive perspective on the variation in housing supply elasticities across different kinds of Finnish cities. Secondly, our analysis benefits from extended time series, allowing for a longer-term understanding. We contribute thus to the literature by providing an updated and expanded analysis of investigating the magnitude of regional variations in the elasticity of housing supply in the context of a small and sparsely populated country, Finland. In particular, our study contributes to the modest evidence base on long-run stock elasticities. In contrast to many prior studies that concentrate on short-term dynamics, our emphasis is on the long-term dynamics of housing markets. We utilize housing stock data, which provides a comprehensive view of the existing housing supply, as opposed to flow data, which typically captures short-term changes such as annual construction rates or changes in the housing stock. Such a stock response approach is rare in the literature. The long-term elasticities are, however, of great importance, as they tell us how regional variables react to different shocks over the longer time horizon – for longer-run growth prospects of a city, it is the long-run elasticity that is of uttermost importance (Oikarinen et al., 2015).

Our elasticity estimates highlight a large regional variation. The elasticity ranges from 0.34 in Helsinki to 2.18 in Seinäjoki, the mean elasticity being 0.83. These findings are in line with previous considerations of housing supply elasticities for Finnish cities by Oikarinen et al. (2015).

Finally, our paper contributes to the debate on the role of institutional and local factors in driving variations in housing supply elasticities. Utilizing unique interview data on land policy interventions in the Finnish context, this paper brings new knowledge on the contribution of various types of interventions to the regional variations in long-run housing supply elasticity. The paper particularly focuses on a country where both spatial planning and the land development process are strongly controlled by local public authorities, providing valuable insights into the factors driving these variations. Our findings suggest that land policy interventions, especially in terms of interventions that increase the indirect costs of the housing development process, do significantly influence local supply elasticities and thereby affect their regional variations. This provides useful guidance also to policymakers in identifying such interventions that are particularly harmful (or least beneficial) for the housing supply responsiveness.

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