

Housing market detections

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Chapter 7

Valorization

The motivation for this thesis originates in the desire to better understand the dynamics behind real estate markets. Why are some neighborhoods considered as attractive, while others are not? There are countless discussions how individual sites are affecting neighborhood values, but often these discussions are not based on scientific evidence. I analyzed three policy topics out of these discussions, contributing to the understanding of housing price determinants and the understanding around individual policy discussions: the cost of education, energy production and cannabis sales points.

Chapter 2 shows that there is no evidence of average and good schools affecting local housing markets. Consequentially, placing a school of high quality should not be used as a tool to increase neighborhood attractiveness. Furthermore, it is shown that external effects of schools are versatile and in proximity of worst performing schools negative externalities significantly outweigh positive and consequently decrease residential housing prices. The previous literature often neglects the distance between properties and schools, focusing on the position within or outside school district boundaries only.

Chapter 3 adds to the discussion on energy production. In recent years, many studies exploring the effects of wind turbines emerged. However, due to the heterogeneity in study areas, times and methods, they were not able to set the findings in relation to other energy sources. In this study, I cover all energy production facilities of a whole country over nearly 30 years. The results show that some energy production facilities have a positive effect on house prices, some a negative and some a negligible effect.

Chapter 4 focuses on the external effects of cannabis sales facilities. Due to a trend in wider acceptance of cannabis use and legalization, policy makers are confronted with a complex choice: where to locate cannabis sales facilities. Chapter 4 explores the spillover effects of such facilities in a market with long experience: the Netherlands. I find that house prices do not increase after cannabis sales facilities are exogenously closed down. Rather, I find that house prices decrease. Residents thus do not seem to experience cannabis sales facilities as a nuisance to their neighborhood.

Throughout the chapters I am constantly confronted with potential endogeneity problems. I therefore explore different methods to measure external effects. This thesis therefore also adds to the discussion on valuation model choices. Only by using difference-in-difference or repeated sales models we are able to establish causal relationships. However, these models require sufficient available data, which are often scarce.

The aforementioned data scarcity leads to the question how we can collect new data? Chapter 5 takes a step into the deep - by exploring future ways of using machine learning to help policymakers reflect on residential housing market decisions. The chapter tackles the bottlenecks of current housing studies, with methods from computer science. In a novel approach, I apply machine learning techniques to property images, estimating property characteristics. I examine the image quality of Google Street View for this purpose and show two example applications of the proposed method. This method has a wide array of possible usages, among the most promising is its application to data scarce settings - such as urbanization in low-income countries, or accurate tax assessments in these countries.