

Land-Use Regulations: A View from the Fifth District

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Land and housing can be costly in a city or region for a number of possible reasons. Places with recreational or cultural attractions or other amenities draw population so the demand for housing and, consequently, land is high in those areas. Prices could also be high at some locations if the supply of land is constrained by the geography. In some areas, however, the price of land is high as the result of heavy land-use regulations (LURs), which restrict the availability of houses.

LURs are often justified on the basis that they intend to correct for market imperfections. Their cost-effectiveness has been questioned by many researchers, however. Regardless of their merits, the use of LURs by local governments has become widespread and their intensity has been steadily increasing.

Understanding the impact of LURs is extremely important, but at the same time challenging. To the extent that LURs reduce housing availability and increase housing prices at certain locations, they may discourage productive labor migration from taking place. Moreover, since LURs tend to affect different interest groups in conflicting ways, some researchers simply view LURs as the outcome of a local political process. Due to the complexity of the large number of local rules in place, their consequences are still not completely understood.

In the Fifth District, the importance and the role played by LURs is far from homogeneous. While LURs are notably constraining in places like Washington, D.C., and some parts of Maryland and Virginia, they are less important elsewhere. This article examines the determinants of LURs, reviews some of their consequences, and looks at their prevalence in the Fifth District.

What Are LURs and How Are They Quantified?

Urban life and the concentration of people and activities in a region have a number of advantages. High densities, at the same time, generate nuisances; zoning and other LURs are among the policy alternatives frequently adopted by localities to address the negative external effects associated with density. But the proliferation of LURs in the United States, a process that gained strength in the 1960s, has imposed substantial pressure on land costs, constrained the expansion of housing supply, and generated excessively high housing prices in some cities.

Cities regulate the use of land in different ways. The term land-use regulations generally encompasses all the rules and policies that set the standards for the development of land and housing construction. These regulations include zoning ordinances that determine how the land should be used (commercial, multifamily, or single-family

use) and the type of structures that can be built. They also include rules that establish how the structures should interact with the surrounding area, such as minimum lot size requirements, maximum height of buildings, maximum units that can be placed on a lot, minimum setbacks for a building from its neighbors, and off-street parking requirements. Other frequently observed regulations are demands for developers to pay for infrastructure (roads, sewers, schools) and historic preservation policies. Together they constitute a fairly complex set of rules not only because they cover many different dimensions, but also because they generally involve the participation and intervention of several enforcement and control authorities. Making sure a particular development complies with all the regulations may result in a lengthy approval process for the construction of housing, raising the overall cost of the development.

Due to the complexity of land-use policies, it becomes difficult to precisely quantify their stringency. One of the most recent and comprehensive measures of the intensity of LURs in the United States is the Wharton Residential Land Use Regulation Index (WRI). This index, developed by Joseph Gyourko and Anita Summers of the University of Pennsylvania and Albert Saiz of the MIT Center for Real Estate, is based in part on the results of a national survey of local LURs conducted across a large number of municipalities. The main purpose of the index is to characterize the regulatory environment in a community.

The questions asked in the survey cover three different areas related to land-use policies. The first set of questions attempts to identify the authorities involved in the regulatory process. The second set asks about the type of regulations most commonly observed in the area (limits on new construction, minimum lot requirements, affordable housing requirements, open space requirements, or requirements to pay for infrastructure). The final set of questions focuses on the outcomes of the regulations. They ask, among other things, whether the cost of housing development has increased or if projects are delayed or take longer to be completed.

The WRI combines this survey information with other data sources that include local environment and open-space-related ballot initiatives, and data on legal, legislative and executive actions involving land-use policies at the state level. In this way, the index captures the overall intensity of LURs in a specific local area. The WRI index is one of the most frequently used indicators of regulatory stringency in the academic literature; some examples will be discussed below.

Another approach is to look at the evolution of the main cost components of housing: land and structures. In a 2003 paper, Edward Glaeser of Harvard University and

Gyourko suggest that the stringency of the regulatory environment in a community could be assessed by comparing the difference between the local home price and the cost of housing construction (that is, the cost of the structures built on the land) per square foot. The idea is that LURs impose an additional cost to housing development, so the difference between housing prices and material costs would in part capture the cost of the regulations. Empirical evidence shows that in the United States, the gap between the two has been steadily increasing since the 1980s, concurrent with the rise in adoption of LURs. The increasing gap is mostly driven by home prices rising more rapidly than material costs throughout the period. The latter seems to suggest that housing availability may be constrained by the high development costs imposed by local barriers to land development rather than by changes in the cost of the structural component of homes.

Developable Land and Local Housing Supply

The supply of land, and therefore its price, can be affected by a locality’s geographic conditions. In a 2010 article in the *Quarterly Journal of Economics*, Saiz estimates the percentage of undevelopable land in 95 U.S. metropolitan statistical areas (these are MSAs with population larger than 500,000). His approach incorporates topography and heavily relies on data from satellite images. It consists basically of calculating first the area within a 50-kilometer radius of the geometric center (or centroid) of each MSA and then removing the area lost to oceans, internal water bodies and wetlands, and the proportion of land with a slope in excess of 15 degrees. He later compares the percentage of developable land and the level and changes in housing values for the different MSAs and finds that they are positively associated. This corroborates the intuition that housing prices would be higher in certain areas simply because of geography.

According to Saiz’s study, among the largest 95 metro areas in the United States (those with population greater than 500,000), MSAs in the Fifth District, such as Charleston-North Charleston, S.C., and Norfolk-Virginia Beach-Newport News, Va.-N.C. are relatively heavily land-constrained. (See table.) The percentage of undevelopable land is approximately 60 percent in those areas. According to the WRI, regulatory stringency in the two MSAs, however, is relatively low. The impact of LRUs is, in contrast, very large in Baltimore, Md., with a WRI of 1.60.

Determinants of LURs

In principle, the availability of buildable land should not restrict housing supply if housing could be constructed more densely. But in many cases, LURs implemented at the local level prevent such practices. Thus, geographic restrictions and legal restrictions may combine

Undevelopable Land in Top Fifth District Metros

Rank	MSA	Undevelopable area (%)	WRI
12	Charleston-North Charleston, SC	60.45	-0.81
13	Norfolk-Virginia Beach-Newport News, VA-NC	59.77	0.12
47	Baltimore, MD	21.87	1.60
54	Columbia, SC	15.23	-0.76
58	Washington, DC-MD-VA-WV	13.95	0.31
62	Greenville-Spartanburg-Anderson, SC	12.87	-0.94
75	Richmond-Petersburg, VA	8.81	-0.38
77	Raleigh-Durham-Chapel Hill, NC	8.11	0.64
83	Charlotte-Gastonia-Rock Hill, NC-SC	4.69	-0.53
88	Greensboro-Winston-Salem-High Point, NC	3.12	-0.29

NOTE: For more on the Wharton Residential Land Use Regulation Index (WRI), see text. Higher WRI values correspond to greater regulatory intensity.

SOURCE: Saiz, A. “The geographic determinants of housing supply.” *Quarterly Journal of Economics*, 2010, vol. 125, no. 3, pp. 1253-1296.

to keep housing availability from responding adequately to demand. In Saiz’s article, he finds that the response of housing supply to price increases is also low in geographically constrained areas, a phenomenon he attributes to LURs. In fact, Saiz shows that regulatory restrictiveness, measured by WRI, tends to be higher in locations that face important geographic constraints on land development.

One possible explanation is the “homevoter hypothesis” originally developed by William Fischel of Dartmouth College in his 2001 book of the same name. In the book, he states that homeowners tend to support and promote local policies that protect the values of their homes. In this case, homeowners ultimately decide the intensity of LURs and their decisions would depend, among other things, on the initial price of their investment. Specifically, homeowners in locations where land prices are initially high would promote the adoption of stringent local regulations, which would eventually lead to even higher home prices. Homeowners in those areas presumably have stronger incentives to protect their investment compared to homeowners in areas with initial lower land prices. The latter includes regions where development occurs at low densities, home prices are close to their replacement costs, and investment in housing is possibly less risky. In sum, according to this explanation, less developable land entails higher land and housing prices; higher housing prices, in turn, lead to more strict regulations, which ultimately push home prices even higher.

In light of the conflicting effects LURs have on different economic agents, understanding the impact of LURs is critical. But it is also challenging. One issue is reverse causation: As noted above, while LURs influence housing prices, housing prices may also influence LURs. In other words, LURs may be partly endogenous, the outcome of a political process that involves the participation of

Regulatory Intensity in the Fifth District

State	U.S. Rank	WRI
MD	6	0.79
DC (MSA)	16	0.33
U.S. average		-0.02
VA	27	-0.20
NC	30	-0.35
SC	41	-0.76
WV	44	-0.92

NOTE: For more on the Wharton Residential Land Use Regulation Index (WRI), see text. Higher WRI values correspond to greater regulatory intensity.

SOURCE: Gyourko, J., Saiz, A., and Summers, A. "A new measure of the local regulatory environment for housing markets: The Wharton Residential Land Use Regulatory Index." *Urban Studies*, 2008, vol. 45, no. 3, pp. 693-729.

different interest groups. Disentangling the causal effects of LURs in this context is complicated: Regulations in a community may induce households to sort by income and other demographic characteristics, and the latter may determine the types and intensity of regulations that are chosen in a specific community.

A recent study by Matt Turner of Brown University and Andrew Haughout and Wilbert van der Klaauw of the New York Fed performs a thorough economic analysis of LURs that controls for the endogenous determination of LURs. They distinguish the differential impact of LURs on different economic agents. For instance, to the extent that LURs effectively prevent the development of undesirable projects, property values may increase. But LURs would have the opposite effect on property values if they discouraged beneficial developments, such as a sought-after grocery store. Finally, while LURs may protect the interests of existing property owners, they deter the entry of new residents.

LURs and the Regional Distribution of Labor

Shifts in population from less-productive areas to more-productive ones are desirable since they would increase the overall well-being in a country. LURs make it difficult for local housing markets to respond to growing demand, however, and thus affect the migration of workers. It becomes more costly in the presence of LURs for workers to change locations and benefit from cities that are more productive. Local wages need to become, under these circumstances, higher to attract workers.

In a 2017 study, Chang-Tai Hsieh of the University of Chicago Booth School of Business and Enrico Moretti of the University of California, Berkeley study this possible consequence of LURs. According to Hsieh and Moretti, to the extent that artificial barriers, such as zoning laws or minimum lot sizes, explain high local housing prices, they would contribute to making the process of moving to thriving regions more difficult, beyond the normal costs of

changing residential locations. Moreover, when households face these additional hurdles to moving, they may end up being trapped in less-productive areas. By introducing additional frictions, LURs induce an inadequate spatial distribution of workers across regions, and such mismatch would entail lower aggregate production and welfare.

In their work, the researchers claim that LURs in exceptionally productive cities, namely New York City, San Francisco, and San Jose, are particularly responsible for curtailing aggregate economic growth in the United States. By blocking the access of workers to high-productivity areas, the proliferation of LURs generates a growing dispersion of wages across regions. Stringent local regulations combined with local productivity increases translate into excessively high housing prices and nominal wages, rather than more workers and more production. Alleviating the intensity of these regulations, specifically in productive cities, would generate a positive external effect on the entire economy.

Importance of LURs in the Fifth District

The work by Hsieh and Moretti also quantifies the costs of local LURs by measuring how much they affect aggregate economic growth. Their analysis indicates that the stringency of LURs (as measured by the WRI), particularly in locations with high productivity growth, decreased U.S. growth from 1964 to 2009 by approximately 50 percent. The researchers also perform a counterfactual exercise that attempts to determine the impact on other cities of a reduction in housing supply restrictions in high-productivity cities, such as New York, San Francisco, and San Jose, to the level of regulation observed in the median city in their sample, which happens to be Richmond, Va. They find, among other things, that employment growth in Richmond would be much lower, since workers would tend to move toward the high-productivity cities. Another way of looking at this result is that cities like Richmond benefit from excessive LURs in high-productivity locations.

Within the Fifth District, there is a wide range in the intensity of LURs at the local level. (See table.) Maryland, D.C., and Virginia show the highest regulatory intensity levels. They are followed, in decreasing order, by North Carolina, South Carolina, and West Virginia. In fact, the last two are among the states with the lowest WRI values — that is, the least restrictive LURs.

The approach suggested by Glaeser and Gyourko to assess the impact of LURs tells a similar story. The figures show the evolution of home prices and residential land prices for Maryland, D.C. and Virginia, the three cases with the highest regulatory intensity in the Fifth District. (See chart.) The indices of real home prices and residential land prices are constructed by Morris Davis of Rutgers University and Jonathan Heathcote of the Minneapolis Fed. The data, reported by the Lincoln Institute of Land Policy, indicate that changes in home prices are largely driven by changes in the price of land for the three cases

presently examined. The cost of land as a proportion of the value of the home is also the highest in those places: The share of land costs is 78 percent in Washington, D.C., 48 percent in Maryland, and 38 percent in Virginia. While a number of locations in D.C., Maryland, and Virginia are moderately constrained by the amount of land that could be developed, which could explain part of the price behavior, the WRI seems to indicate that LURs play a much more important role than geography in restricting housing availability in those jurisdictions.

Conditional Zoning in Virginia

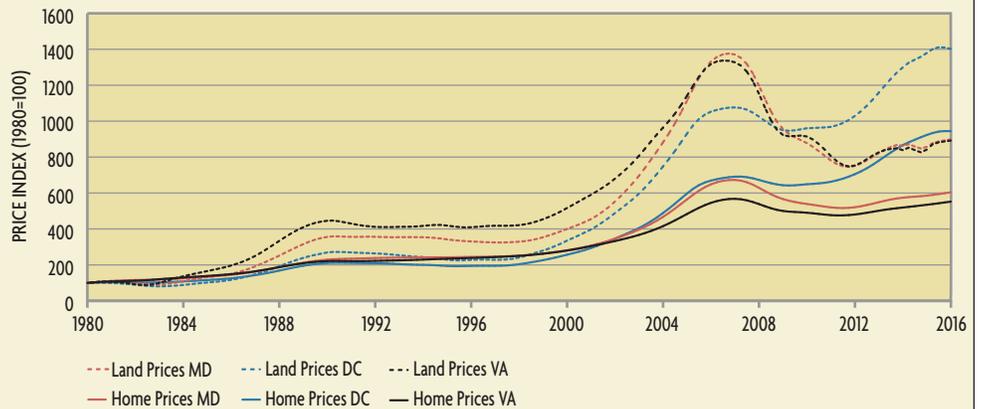
One type of LUR largely used by local governments in Virginia is conditional zoning or proffers. State legislation in Virginia allows a landowner proposing rezoning to perform an act or donate money, land, or services to a locality to compensate for the effects generated by such rezoning, such as the need for new infrastructure. When a local authority accepts cash proffers, the locality has to begin working on the agreed construction or improvement within a period of 12 years after receiving full payment. Even though state legislation entitles all jurisdictions to adopt some kind of conditional zoning, not every locality is eligible to accept cash proffers.

Cash proffers are given for various purposes; in the fiscal year 2016-2017, the most important ones were road and other transportation improvements (43 percent), schools (26 percent), and fire, rescue, and public safety (13 percent). From 2000 until the beginning of the financial crisis, the use of cash proffers increased along with the number of localities involved. (See chart.) The collection of cash proffers and the average amount of cash proffers collected per locality have increased significantly since 2011.

Even though the use of cash proffers was originally intended to serve a specific purpose, namely to address the potential negative external effects of rezoning an area, they have become de facto a very powerful growth management tool. Shannon McKay, research manager in the Community Development department at the Richmond Fed, has extensively studied the relevance of cash proffers in Virginia, focusing on how they have affected the growth

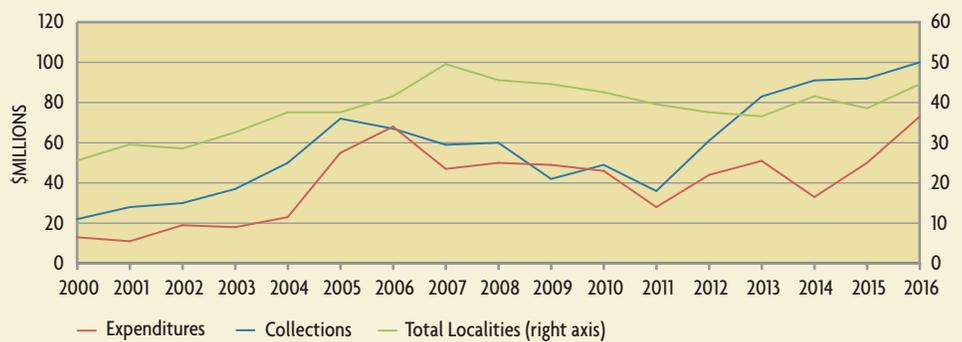
Real Home and Residential Land Prices

Maryland, District of Columbia, and Virginia



SOURCE: Author's calculations using data from: Davis, Morris A. and Jonathan Heathcote, 2007, "The Price and Quantity of Residential Land in the United States," *Journal of Monetary Economics*, vol. 54 (8), pp. 2595-2620; data located at Land and Property Values in the U.S., Lincoln Institute of Land Policy <http://www.lincolnst.edu/resources/>

Cash Proffers in Virginia



SOURCE: "Report on Proffered Cash Payments and Expenditures By Virginia's Counties, Cities and Towns 2016-2017." Commission on Local Government Commonwealth of Virginia, November 2017.

of localities. In her work, she specifically examines the extent to which granting local governments the ability to collect cash proffers restricts local housing availability. She conducted a regression analysis in which she evaluates how cash proffer activity in a given year affects housing supply in a subsequent year. The analysis exploits the fact that throughout the years there has been some variation in the number of localities eligible to accept cash proffers in Virginia. The study's main conclusion is that past cash proffer revenue actually reduces housing development in subsequent periods.

While rules and standards are necessary to generate the best possible urban life, there is always the risk of shifting toward an excessively regulated environment in which the cost of the regulations overshadows their intended objectives. The challenge is, of course, to determine what kind of minimal regulations would be necessary to ensure a pleasant and, at the same time, productive environment without imposing unwarranted costs on both the local and the aggregate economy. EF