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Tarnishing the golden and empire states: Land-use restrictions and the U.S. economic slowdown[☆]

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ABSTRACT

This paper studies the impact of state-level land-use restrictions on U.S. economic activity, focusing on how these restrictions have depressed macroeconomic activity since 2000. We use a variety of state-level data sources, together with a general equilibrium spatial model of the United States to systematically construct a panel dataset of state-level land-use restrictions between 1950 and 2014. We show that these restrictions have generally tightened over time, particularly in California and New York. We use the model to analyze how these restrictions affect economic activity and the allocation of workers and capital across states. Counterfactual experiments show that deregulating existing urban land from 2014 regulation levels back to 1980 levels would have increased US GDP and productivity roughly to their current trend levels. California, New York, and the Mid-Atlantic region expand the most in these counterfactuals, drawing population out of the South and the Rustbelt. General equilibrium effects, particularly the reallocation of capital across states, account for much of these gains.

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1. Introduction

The U.S. record of 250 years of roughly constant economic growth has gone hand-in-hand with enormous reallocation of population across U.S. regions. This includes the country's westward expansion into the Midwest and the Great Plains states in the 1800s, the urbanization of the U.S. in the 1800s and 1900s, and the remarkable expansion of California in mid and late 1900s.

To place California's population growth in context, we note that 18 states in 1900 were larger than California, including Alabama, Iowa, Kentucky, Georgia, and Mississippi. Illinois was roughly three times as large as California, Missouri was more than twice as large, and Kansas was roughly the same size at that time. By 1990, roughly 12% of the U.S. population resided in California, compared to less than 2% in 1900. And by 1990, California was as much as 11 times larger than some of the states that dominated California in 1900.

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Recently, however, regional population reallocation patterns have declined, and California's share of the population stopped growing. Frey (2009) documents that the U.S. migration rate has declined by about 40% since the 1980s, and he shows that this decline in reallocation appears across all demographic groups.¹

These changes in regional reallocation, and the sudden stop in the expansion of California's population share, have coincided with three other observations of interest. One is the decline in aggregate economic activity relative to historical trend that predates the Great Recession. This period of relatively low productivity growth and low output growth has been characterized by Decker et al. (2014) as a decline in "U.S. Dynamism," with much less factor reallocation.²

A second observation is that housing prices in California and other highly productive states rose considerably around the same time. Between 1940 and 1980, Census data show that California housing prices were on average around 35% higher than those in the rest of the country. But by 1990 the California housing price premium had risen to 262%.

A third observation is that state-level income convergence has slowed. Ganong and Shoag (2013) and Giannone (2017) show that income convergence across states, which we interpret as workers moving out of states with relatively poor job opportunities, to states with better job opportunities, began to slow in the 1980s. Moreover, the states with the highest housing prices, such as California, continue to have much higher worker productivity.

This paper interprets these observations as reflecting state-level land-use policies that have limited the available land for housing and commercial use, which in turn have raised land prices, slowed interstate migration, reduced factor reallocation, and depressed output and productivity relative to historical trends.

We construct a state-level growth model of the U.S. to analyze this issue. States in this model feature: (1) exogenous differences in land size, (2) exogenous differences in productivity levels, (3) exogenous differences in amenities, and (4) exogenous differences in land use-restriction policies that affect the amount of usable land, and which in turn affect the price of land and the productivity of capital and labor. Thus, states feature different attributes, and population will tend to move out of states with relatively poor productive opportunities and/or relatively poor amenities, to states with better productive opportunities and/or amenities.

This analysis models these state-specific policies as a factor that affects the percentage of the state's urban land stock that can be used for housing and for production of a consumption-investment good. This model policy variable stands in for the host of land-use regulations and restrictions that are used within states, including density restrictions, zoning restrictions, environmental restrictions, building restrictions, delays in obtaining building permits, and eminent domain and other policies that effectively take private property, all of which impact the opportunities or the incentives to develop land.

This analysis requires a systematic quantitative measure of land-use regulations over time and across states. To our knowledge, there is no such existing measure. Therefore, we construct a measure using the model and a variety of state-level data sources, including state-level labor productivity, housing prices, and employment shares. This allows us to use the model to infer a panel of the state-specific policy distortions, and also allows us to infer state-level TFP and state-level amenities.

We find that the model-inferred land-use distortions are quite highly correlated with other measures of state-level distortions, and we also find that the model-inferred state-level amenities are quite highly correlated with existing measures of quality-of-life measures across states. We find that California and New York have the highest TFP and also have the very restrictive land-use regulations, particularly in recent years. In contrast, we find that Texas has the least-restrictive level of land-use regulations among the states, which is consistent with prior evidence in Quigley and Rosenthal (2005).

We use the model to analyze the impact of these state-level distortions on output, productivity, labor, consumption, investment, and the allocation of the population across states. We conduct a number of counterfactual experiments that we call *deregulation experiments*, in which we reduce 2014 distortions to their levels in either an earlier year, or to a level based on the model-inferred 2014 Texas distortion level.

We find that even modest land-use deregulation leads to a substantial reallocation of population across the states, with California's population growing substantially. We also find that economy-wide TFP, output, consumption, and investment would be significantly higher as a consequence of deregulation. We find that U.S. labor productivity would be 12.4% higher and consumption would be 11.9% higher if all U.S. states moved halfway from their current land-use regulation levels to the current Texas level. Much of these gains reflect general equilibrium effects from the policy change. In particular, roughly half of the output and welfare increases reflect the substantial reallocation of capital across states.

The paper is organized as follows. Section 2 provides a literature review. Section 3 discusses the challenges to measure land restrictions over time and how our approach works. Section 4 presents the model economy. Section 5 summarizes the data. Section 6 discusses the quantitative approach and model calibration. Section 7 presents the counterfactual experiments. Section 8 conducts robustness exercises, and Section 9 concludes.

2. Literature review

This paper, which focuses on the general equilibrium impact of land-use regulations on aggregate economic activity, is related to a number of papers that have separately studied the issues of land-use regulations, declining regional mobility,

¹ For additional discussion on the interstate migration slowdown, see Molloy et al. (2014) and Kaplan and Schulhofer-Wohl (2017).

² For additional discussion on the U.S. decline in churn and labor market dynamism, see Hyatt and Spletzer (2013), Karahan et al. (2015) (who focus on entrepreneurship), and Molloy et al. (2016).

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