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The effect of the housing crisis on the finances of central cities

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Abstract

In 2015, eight years after the start of the Great Recession, average per capita revenue in the nation's largest central cities was 7% below pre-recession levels, a decline that in both depth and duration is the most severe in the post-war period. In this paper, we address the role of the housing market in this decline. We analyze the impact of the boom and subsequent collapse in housing prices and the unprecedented surge in mortgage foreclosures on the finances of central cities. To link city finances to housing conditions, we draw on a specially created data base that takes account of the revenues and spending of all the local governments that provide services to city residents. Our regression analysis, which employs data from 2000 through 2014 for 90 large central cities, finds statistically and economically significant effects of both housing price changes and foreclosure rate changes on property tax revenues. We also find that property tax levy limits dampened the fiscal response to the housing bubble and bust. During the housing bubble period, property tax revenues and capital expenditures rose significantly faster in non-levy limit cities than in cities subject to levy limits, but then fell more sharply during the housing bust period. We estimate that the direct effect of the housing bust was responsible for 21% of the decline in the general revenue of large central cities from 2009 to 2011.

Introduction

The Great Recession was precipitated by a severe housing crisis with housing prices falling by more than 50% in some areas, and with a more than six-fold increase in the number of housing foreclosures between 2004 and 2011. While there already exists a large literature on the price dynamics of the housing market before, during, and after the recession and on the causes of the sharp rise in foreclosures, to date there has been very little research on the impact of the recession and the housing crisis on the ability of local governments to finance the delivery of public services.[1]

In this paper, we focus on the impacts of the housing crisis on the financing of large American central cities. As we will show, the decline in housing prices and the rise in foreclosures led to substantial reductions in both revenues and spending of the nation's largest central cities. The fiscal impacts of the housing crisis were not only severe, but long lasting. Although the Great Recession ended in 2009, in 2016 real per capita expenditures in many central cities were lower than they had been in 2006, the year prior to the recession.[2]

This paper provides the first comprehensive analysis of how the housing crisis impacted the revenues of a nationwide sample of large central cities. As we will describe in more detail below, the focus of most of the existing literature has been exclusively on the relationship between changing housing prices and property tax revenues.[3] In this paper, we provide an in depth analysis of the property tax channel and also explore the direct effect of the housing market on the general revenues (from all sources) of cities. Nearly all the existing research used data on housing prices and property tax revenues for periods that ended prior to or during the Great Recession. Because changes in property tax revenue tend to lag changes in housing prices by several years, these studies were too early to directly observe the full fiscal impact of the housing crisis. Furthermore, most of the existing literature relies on national data, data at the state or metropolitan area level, or focuses on local governments in a single state. Providing a better understanding of how changes in the housing market affects local government finances is important for the smooth functioning of cities. Public services such as education, public safety, sanitation, and infrastructure investment are essential not only for the well-being of city residents, but also play a crucial role in supporting housing values.[4]

Any effort to analyze the impacts of the housing crisis on the financing of U.S. cities faces the problem that the governmental structure and organization of cities varies substantially across the country. Direct comparisons across municipal governments are often highly misleading because public services provided to central city residents and businesses often come from a variety of different governments. In a few cities, the municipal government finances and provides nearly all local government public services, while in many other cities, the responsibilities for financing and providing services is divided between the municipal government and several overlying independent governments, such as counties, school districts, and various kinds of special districts.

To deal with these variations in governmental structure, we have constructed a unique central city database called *fiscally standardized cities*, or FiSCs. The creation of FiSCs, which we describe in more detail later in the paper, involves accounting for all revenue and spending of a central city municipal government and those portions of revenue and spending by independent school districts, county governments, and special districts that are collected from or flow to central city residents and businesses.

To explore the linkages between changes in the housing market and the fiscal condition of central cities, we construct an empirical model of the relationship between several measures of housing market performance and the property tax revenue and the total general revenues of FiSCs. Our analysis utilizes 2000 through 2014 housing market and fiscal data for 90 FiSCs representing most of the nation's largest central cities. We pursue an estimation strategy that employs city and year fixed effects plus multi-year lags between housing market characteristics and local government revenues. The lag structure is consistent with the administrative procedures used to implement the property tax. These steps eliminate or reduce any possible endogeneity that may exist between contemporaneous characteristics of the housing market and local government fiscal behavior. In Section 6, we include a detailed explanation for the plausible exogeneity of the major explanatory variables used in our analysis.

The most important channel through which the housing market impacts local government finance is through the property tax. We find both statistically and economically significant effects of housing price changes and foreclosure rate changes on property tax revenues, with the housing price effect about two times as great as the foreclosure effect. The elasticity of the property tax with respect to the housing price index centers on 0.20. Property tax revenues responded similarly to both housing price increases and decreases. Sharp housing price declines were strongly correlated with subsequent increases in foreclosures rates. The net effect is that housing price declines, and the associated foreclosures that followed, can explain more than ¾ of the decline in property tax revenues from 2009 to 2014. These declines were reinforced by declining income in most of the sample cities. We estimate that the decline in median income from 2009 to 2013 was associated with an additional decline of almost three percentage points in property tax revenues.

The severity of the housing crisis was also linked to the broader local and even state economies, with greater housing market stress associated with significant declines in total city revenues. We estimate that the direct effect of the decline in the housing market was responsible for about 21% of the decline in general revenues. Given the correlation between income changes and housing market stress, this estimate is likely to understate the full effect of the housing market on the decline in the general revenue of FiSCs.

Section 2 provides a brief review of the small literature on the fiscal impacts of the Great Recession and the boom and bust housing market cycle on the financing of local governments. In Sections 3 and 4, we describe the methodology used to construct our fiscally standardized cities dataset and then present data on the changes in the various sources of revenue of central cities (represented by our 90 FiSCs) for the period starting in 2007, the year the Great Recession began, through 2015. In Section 5, we discuss changes in the housing market in the 90 central cities in our sample. We trace the pattern of the CoreLogic housing price index and of foreclosure rates before, during, and after the Great Recession.

To help ascertain the impact of changes in the housing market on the financing of central cities, we estimate several models using data from 2000 through 2014. Section 6 describes our modeling strategy, followed in Sections 7 and 8 by brief discussions of the data and estimation issues. In Section 9, we present the results of our empirical analysis by first focusing on the impacts of changes of housing prices on property tax revenue and general revenues. We then address the independent effects of changes in the foreclosure rates in Section 10. In Section 11, we investigate the extent to which the housing price and foreclosure results are influenced by the existence of property tax levy limits. Finally, in Section 12, we summarize the results and discuss some of the policy implications.

Section snippets

Literature review

A small literature exists on the impacts of changes in the housing market on the financing of state and local governments in the United States. The Great Recession and the boom and bust cycle in housing prices during the first decade of this century has clearly spurred interest in this topic. Using national data from 1976 through 2007, Lutz (2008) explores the relationship between changes in housing prices and property tax revenues. He finds that changes in housing prices are reflected in …

Fiscal comparisons among central cities: the construction of *FiSCs*

Direct comparison across city governments of revenues by source can be highly misleading, because responsibility for financing the array of public services provided to city residents and businesses varies widely across cities.[7] …

Fiscal conditions in the nation's large central cities

No economic downturn since the depression of the 1930s has had as steep and as long-lasting impact on city revenues and expenditures as the Great Recession. In the FiSC sample, average real per capita general revenues peaked in 2007 and continued to fall through 2014.[11] …

Housing market developments in the nation's central cities during and after the great recession

The national pattern of house price dynamics during this tumultuous period hides considerable heterogeneity by geographic area. Very few studies, however, focus on cities as the unit of analysis.[15] …

Modeling strategy

To explore the linkages between conditions in the housing market and city revenues, we estimate a set of multivariate statistical models, focusing first on the property tax and then on the *general revenues* of FiSCs.[18] …

Data

Detailed revenue data for FiSCs comes from the Census Bureau's individual unit of government files generated from the *Annual Survey of State and Local Government Finance*. Data on housing prices and on foreclosures were obtained from CoreLogic. The CoreLogic data were available for 91 of the 150 central cities in the FiSC database. Washington, DC is excluded from our regression models because it has no overlying state government, and hence no data on state aid. Thus, our multivariate models are …

Estimation

Following the modeling strategy outlined above, we estimate equations for property tax revenues and general revenues. All revenue sources are measured in real per capita terms, and the models are estimated in log form for dollar-denominated variables and for the housing price index. All models are estimated with city fixed effects and year effects. Given the lags inherent in the process of reassessing the market value of property, we expect the housing variables to enter the property tax and …

Property tax results

Regression results for the property tax are shown in Table 2. Assessment lags imply that changes in housing prices and foreclosure rates will affect property tax revenues with a lag. The first model in Table 2 incorporates a three-period lag for the two housing variables, while model 2 lags the housing variables by one-period. We also estimated a model with two-period lags and a model with lags of one, two, and three years.[29] …

Property tax results

The foreclosure rate, lagged three periods, has a significant negative effect on property tax revenues in all specifications. In model 2, which lags the foreclosure rate by one period, the coefficient is positive and statistically insignificant.[33] …

The effect of property tax levy limits

To test whether the responsiveness of the property tax to changes in housing prices varies depending on the presence or absence of property tax limitations, we estimated a specification which includes both the price index alone and the price index times an indicator variable denoting the presence of a tax limitation. We experimented with various types of limitations and found that the most robust was an indicator for any type of limit on property tax levies. 57 of the 90 cities in our sample …

Conclusions

The housing crisis that precipitated the Great Recession led to significant fiscal stress for U.S. cities. On average, real per capita revenues peaked in 2006 and continued to fall through 2015. In 2015, per capita real operating expenditures were 4% below their 2007 level. Revenue and spending reductions during and after the Great Recession have been sharper and longer lasting than in any other post-war recession.

We use a specially created data base that accounts for revenues and spending of …

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