Property Tax Assessment and Housing Market Cycles

Abstract: The resilience of property tax revenue with respect to economic fluctuations is often seen as a virtue from the perspective of local policymakers seeking to maintain predictable services and employment. We consider the sources of property tax stability and conclude that it derives primarily from a failure to fully adjust assessed values as market values change within a jurisdiction. We consider the implications of sluggish reassessment for homeowners and explain that it can either enhance or reduce vertical inequity in property taxation, depending on whether the jurisdiction is experiencing housing price convergence or divergence. We find that housing price convergence is more common for US counties, but that housing price divergence was prevalent during the Great Recession. During that period, we show that sluggish reassessment likely exacerbated property tax inequity for areas suffering the greatest impacts of the foreclosure crisis.

Chirstopher Berry
crberry@uchicago.edu

Qining Wang
qiningwang@uchicago.edu

The University of Chicago
Harris School of Public Policy

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Introduction

The property tax is the fiscal lifeline of US local governments, funding vital services including education, public safety, and sanitation. While the property tax remains unpopular with the public (Higham 2024), it is typically viewed favorably by policymakers and academics, who consider it to be "a good tax" (Youngman).[1] One often touted virtue of the property tax is its relative stability across economic cycles (Alm et. al 2011; Giertz 2006). Compared to income and sales taxes, revenue from property taxes has generally been robust to economic downturns, providing a predictable revenue stream for local officials trying to maintain government services and employment.

In this paper, we investigate the mechanisms underlying property tax stability and consider their implications for taxpayers. Working from micro-level data on residential property assessment, taxes, and sale prices, as well as zip-code level housing price indices, we investigate within-jurisdiction responsiveness of assessed values and taxation to changes in housing prices. Consistent with prior literature using more aggregated data, we show that property tax revenue is stable over time largely because local officials do not fully adjust assessed values to reflect changes in market values. While the resulting stability of revenues may be desirable for local officials, it may have less desirable implications for taxpayers. In particular, it implies that homeowners in rapidly appreciating neighborhoods will pay too little in taxes, while those in declining neighborhoods pay too much, relative to their actual market values. In this regard, we find suggestive evidence that assessment lags contributed to property tax regressivity during the Great Recession, when poorer neighborhoods were hit hardest by the foreclosure crisis. However, the general implications of these results for vertical equity in property taxation are

[1] This view is not universal (see Fisher 1996; Ihlanfeldt 2013).

complex and context-dependent, as often lower-priced neighborhoods experience faster appreciation than higher-priced neighborhoods, in which case sluggish reassessment can actually be a source of progressivity in effective tax rates.

The paper proceeds as follows. We first provide an analytical framework for considering how changes in property taxes and housing values are connected over time. We review the literature that has attempted to gauge the responsiveness of property taxes to housing values at the jurisdictional level. In our main analyses, we then estimate responsiveness of assessed values and taxes to changes in housing prices within counties. We then analyze the patterns of housing price convergence and divergence within counties and connect those changes to trends in assessment regressivity. We conclude by discussing the implications of our findings for understanding how assessment frequency relates to property tax equity.

Background and Literature Review

Following on Lutz (2008), the standard approach in the literature is to model changes in property tax revenue as arising from the combination of a *mechanical effect* and a *policy effect*. Abstracting from the finer details of local tax systems, define property tax revenue the product of the tax rate and the tax base:

$$R = \tau * V \tag{1}$$

where R is property tax revenue, τ is the effective tax rate, and V is the market value of the property tax base. From this expression, it follows that the change in property tax revenue is

$$\Delta R = \tau * \Delta V + \Delta\tau * V. \tag{2}$$

In this formulation, $\tau * \Delta V$ is referred to as the *mechanical effect* and $\Delta\tau * V$ is labeled the *policy effect*. The mechanical effect is so named because of the claim that, "when the market value of property increases, tax revenue will mechanically increase" (Lutz 2008, p. 5). This statement is not strictly correct, however, because the property tax is levied on estimated values, not market values. Estimated values do not increase mechanically with the market value of property. They only increase when assessors change them. This distinction is important because assessors may not always change their estimated values in sync with changes in market values.

In practice, estimated values for tax purposes may be out of sync with market values for many reasons. First, assessors may not revalue properties frequently and in many states are not required to do so (Higginbottom 2010). In one famous case, Philadelphia did not do a comprehensive reassessment for decades prior to a 2013 reform known as the Actual Value Initiative (Hou et al. 2021). The city did not do another comprehensive reassessment until 2019. Second, even when they revalue property regularly, assessors almost inevitably use data that is out of date by the time the tax is levied. The assessed values in place in any particular year were likely estimated in the prior year, if not earlier, based on data from even earlier years (IAAO 2013). Third, many states have imposed some kind of limit on the rate of increase in assessed values, property taxes, or both (Haveman and Sexton 2008). When actual market values increase faster than the allowed rate, assessors will not be able to fully sync taxable values with market values (Hayashi 2014). Finally, assessors may opt to hold estimated values below market values for political reasons, which Mikesell and Lui (2013) call "a property tax tradition."

While the scholarly literature on the temporal correlation between assessed values and housing prices is fairly small, there was a surge of interest during and after the Great Recession because of the apparent unresponsiveness of property tax revenue to an historic decline in housing prices. Figure X shows changes in home prices, as measured by the Zillow Home Price Index, and changes in property tax revenues, according to the *Annual Survey of State and Local Government Finance*, 1990 through 2022. While the changes in revenue and housing prices tracked fairly closely in the 1990s and early 2000s, they appeared to decouple during the recession. As housing price growth went into negative territory for several years, property tax revenue continued to climb. While the rate of growth in tax revenue did slow a few years after housing prices had cratered, it never experienced anything like the absolute decline in housing values.

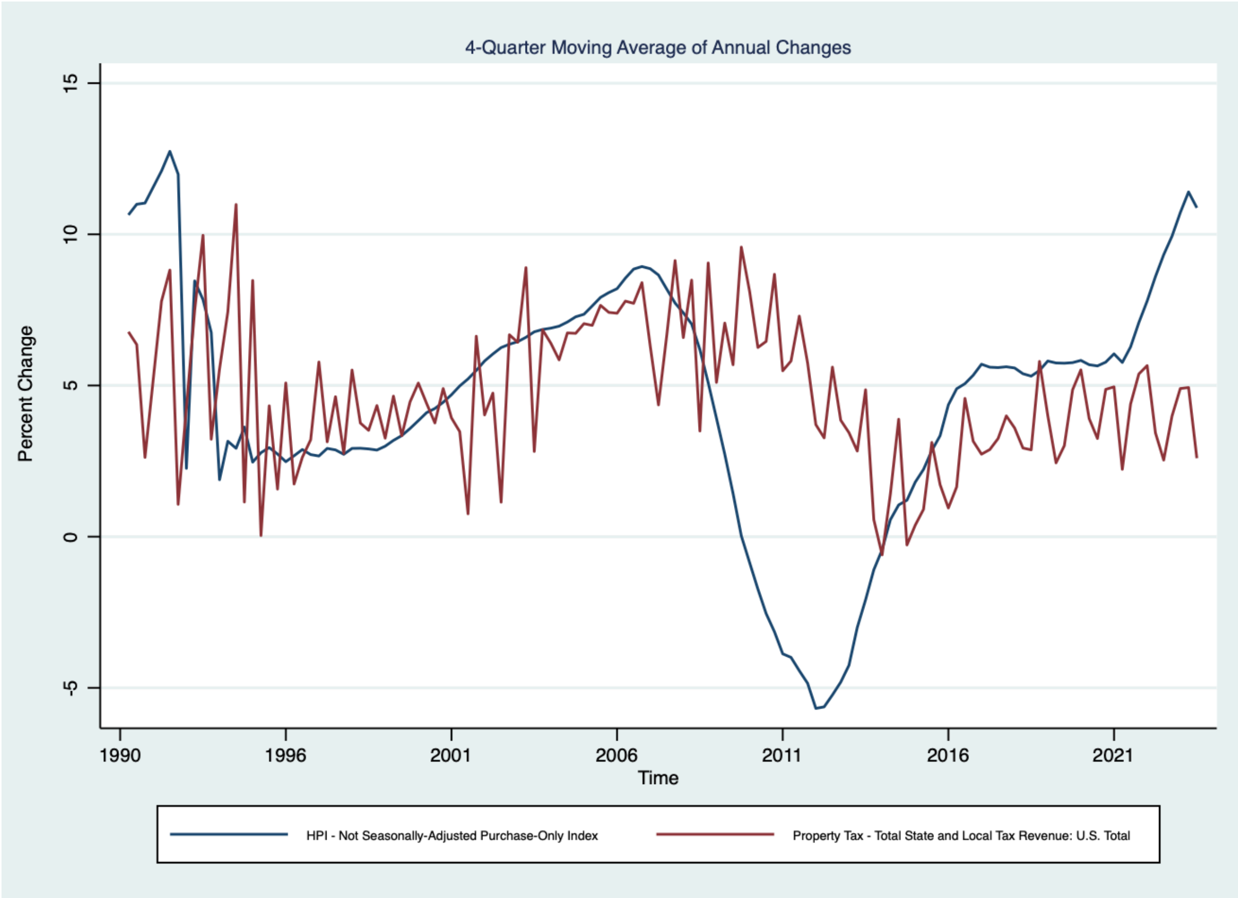

Figure 1: Housing Prices and Property Tax Revenue, 1990-2022

Lutz (2008) was one of the first to investigate the apparent decoupling in growth rates between property tax revenue and housing prices. Using aggregate national data as well as states and local governments, he estimates a long-run elasticity of approximately 0.4 between property tax revenue and housing prices. He finds that in periods of depreciation, the elasticity is essentially zero, suggesting that policymakers offset potential declines in revenue by increasing the effective tax rate. However, he was writing at the beginning of the recession, using data through early 2005, so it is not clear that his estimates reflected the long run elasticity of tax revenue to market value declines.

Several subsequent studies have updated Lutz's (2008) analysis and extended it in various ways, following the same basic analytical approach. Lutz et al. (2011) use data through 2009 and continue to find relatively little responsiveness of property tax revenue growth to housing price declines, although they acknowledge that there are too few instances of local price declines in their data to reach firm conclusions. Goodman (2014) uses city- and county-level level housing value estimates from Zilllow through 2012 matched to property tax data from the *Annual Survey of State and Local Government Finances*. He finds a long-run elasticity of 0.3 to 0.4 between property tax revenue and housing prices during periods of price declines, and a smaller elasticity during periods of housing price growth. He also finds stronger responsiveness in states that mandate annual reassessment. The most recent paper to extend the Lutz approach is Brosy and Ferrero (2021), who add data through 2018, separately measure assessed values and mill rates, and consider the influence of tax and expenditure limitations. They find a long-run elasticity of tax revenue to house prices of 0.2 to 0.5, and conclude that policymakers offset increases in the tax base with decreases in the mill rate. They estimate an elasticity of -0.56 between housing prices and the mill rate. However, they find that both elasticities are weaker during the Great Recession (2007 to 2015), when they estimate that declines in home values had essentially no effect on revenue because the small decline in assessed values was almost fully offset by increases in mill rates.

In addition to the nationwide studies following Lutz (2008), there have been several relevant studies focused on particular states or sets of localities.

Mikesell and Liu (2013) analyze a panel of large US cities from 1999 to 2011 and attempt to disentangle the role of property assessment, tax rates, and delinquency rates in explaining the elasticity of local revenue with respect to changes in housing prices. They find a long-run elasticity of assessed values with respect to housing prices of approximately 0.4, broadly consistent with the Lutz-inspired studies. They also find that property tax rates increase to offset loss in revenue due to housing prices declines, making overall revenue fairly stable. They found no significant impact of house price declines on property tax delinquencies, at least as of 2011.

Studying a panel of cities in Florida from 1994 to 2008, Doener and Ihlanfeldt (2011), analyze multiple pathways through which housing prices may influence local revenues, such as through new construction, assessed values, millage rates, and revenues from other sources. Across all the pathways, they nevertheless find that changes in housing prices have little effect on city revenues, a result they attribute to a catch-up provision in Florida state law (since eliminated) that allowed local governments to raise assessments even when market values are falling, so long as assessed values remained below market values.

Cromwell and Ihlanfeldt (2014) study a panel of cities and counties in Florida from 1995 to 2011. They find that both types of governments raise millage rates after home value declines, and that cities also cut expenditures. They find that counties are more likely than cities to rely on increases in millage rates to offset declines in housing values, a difference they attribute to counties' greater "monopoly power" in terms of local government competition due to their much larger geographic size.

Alm et al. (2011) examine the experience of 180 school districts in Georgia from 1997 through 2009. They distinguish changes in assessed values and changes in tax rates, and show that school districts enjoyed steady revenue over time, even as the aggregate value of the property tax base declined, by offsetting declines in the base with increases in rates.

While most studies in this literature are based on comparisons across jurisdictions, a few studies have looked at within-jurisdiction variation in property tax responses to housing price changes. Most relevant is Hou et al. (2021) who analyze property tax assessments in Philadelphia before and after implementation of the Actual Value Initiative (AVI) in 2013, the first citywide reassessment in decades. They find that the failure to reassess led to regressivity, with lower-priced properties being assessed at a greater ratio of their market value than higher priced properties, an inequity that was significantly reduced after the AVI. They also find that the AVI led to declines in effective tax rates in majority Black neighborhoods, which had become over-assessed over time. These results suggest that the relative inelasticity of assessed values with respect to changes in housing prices led to inequity in effective tax rates between low- and high-priced properties within the jurisdiction.

Other studies show that Detroit's inability to align assessed values with plummeting property values during the Great Recession led to staggering over-assessment, disproportionately affecting lower-priced properties (Hodge et al. 2017), and resulting in a massive wave of tax-related foreclosures (Berry and Atuahene 2019).

In this paper, we advance the literature on property tax responses to housing prices in two ways. First, many of the existing studies were written in the midst of the Great Recession and it is not clear whether the estimated elasticities capture the full long-run responses. We use data through 2019, which captures the entire recession and recovery in housing values. Second, and more important, most prior studies rely on aggregated data at the jurisdiction level and do not consider the within-jurisdiction implications of their findings. The exceptions are studies of individual cities. We examine the implications of the inelasticity of property assessments to housing prices across neighborhoods within the same jurisdiction for a nationwide sample of counties.

Data & Empirical Strategy

We rely on parcel-level sale prices and assessment data from Corelogic, a national vendor that compiles administrative records from local assessors, recorders of deeds, and other offices. The earliest year for which Corelogic has substantial national coverage is 2007, and we have access to data through 2019 covering most of the country. Roughly 2,700 unique counties appear in our Corelogic data over this period, although the panel is imbalanced and there are fewer counties in the earlier years.

Using the Corelogic data for individual parcels, computed average assessed values, tax bills, and sale prices at the zip code level for each year from 2008 to 2019. Because we are interested in the relationship between assessed values and sale prices, we restrict our analysis to homes that sold during this period. This includes roughly a total of 49,494,941 residential transactions. We restrict our sample to single-family homes, duplexes, and condominiums and include only transactions classified as arm's length by Corelogic, which excludes, for example, sales between related parties, sales resulting from a divorce settlement, and sales of foreclosed properties. When a property sells more than once in the same year, we exclude all observations for that property in that year, as it is not uncommon for the same transaction to be re-reported if there is an error in the first recording document. We exclude California, which uses acquisition-based assessment, in which properties are reassessed at the time of sale rather than at regular intervals (Sexton, Sheffrin, and O'Sullivan 1999) because we would not expect assessed values to track market prices in such a system. To mitigate the influence of potential outliers due to data errors or inadvertently included non-arm's length transactions, we trim the data to exclude the highest and lowest 2% of sales ratios in each county in each year.

We also compiled independent estimates of zip code-level housing prices from Zillow. Specifically, we use the Zillow Home Value Index (ZHVI). ZHVI is meant to measure the value of a "typical" home in the region in question, which Zillow defines as homes in the 35th to 65th percentile of the local price distribution. ZHVI is available for roughly 26,000 zip codes, which includes most of the country by population but has an urban bias in coverage.[2]

In general we will rely on ZHVI to measure local prices because this metric adjusts for changing composition of homes sold and is therefore more likely to represent market trends. However, we note that ZHVI is highly correlated with average sale prices in the Corelogic data and our results are not substantially different if we use average Corelogic sale prices in place of the ZHVI in the analyses that follow.

Merging the Corelogic and Zillow data yields a zip code-level data set that encompasses 185,277 observations spanning 21,740 unique zip code areas. The panel is imbalanced and achieves greater coverage over time. Table 1 provides summary statistics for the main variables of interest and describes the coverage of the data over time.

[2] See Goodman (2014) for a discussion of the geographic coverage in the ZHVI data.

Table 1: Median Values of Main Variables, by Year

Year	Number of zip codes	Sale Price	ZHVI	Assessed Value	Log change in sale price	Log Change ZHVI	Log change in assessed value
2007	7,824	197,987	186,097	97,007	.	.	.
2008	11,085	184,917	181,977	101,503	-0.085	-0.032	0.048
2009	13,230	151,920	153,843	96,230	-0.099	-0.070	-0.021
2010	14,580	151,170	148,730	92,674	-0.003	-0.029	-0.010
2011	15,519	147,462	142,126	95,001	-0.033	-0.042	-0.008
2012	17,113	147,837	138,372	92,942	0.034	-0.004	-0.011
2013	17,563	157,397	145,469	91,860	0.061	0.038	0.000
2014	19,875	161,800	151,945	98,100	0.055	0.051	0.017
2015	20,367	170,550	159,795	103,870	0.047	0.043	0.027
2016	21,759	171,510	163,406	102,030	0.046	0.049	0.026
2017	22,025	181,068	170,357	102,715	0.060	0.046	0.026
2018	21,948	192,348	180,720	102,441	0.058	0.056	0.024
2019	22,550	197,265	186,792	107,866	0.044	0.048	0.043

Notes: Zip-code level sale prices and assessed values are computed from Corelogic; zip code Zillow Housing Value Index (ZHVI) provided by Zillow. Log changes are the one-year difference in the log value of the variable.

Following the prior literature (esp. Lutz 2008; Lutz et al. 2011; Goodman 2014), our primary empirical specification is a distributed lag regression model to capture the elasticity and timing of assessed value responses to changing market prices. Specifically, we regress the log change in assessed values against the log change in ZHVI plus three lags of log changes in

ZHVI. The sum of the coefficients reflects the cumulative elasticity after four years. We stress that we do not interpret these coefficients as representing causal relationships, but simply the over-time response of assessed values to changing market prices, which is in fact our quantity of interest.

Results

We first analyze assessed value responses to housing prices at the zip-code level, and then estimate the elasticity of taxes. We next consider the implications of these findings for within-jurisdiction equity in property taxes.

Zip Code Assessment Elasticity

In this section, we investigate the within-jurisdiction the elasticity of assessed values with respect to sale prices. Because we are interested in comparing assessed value responses to price changes across zip codes within the same jurisdiction, we include county fixed effects in all the models. We also include year fixed effects to purge secular trends in assessed values and sale prices.[3] The standard errors are clustered at the county level.

Models (1) and (2) of Table 2 use the complete zip code sample from 2007 through 2019. Model (1) shows the contemporaneous correlation between assessed value changes and changes in the ZHVI, as a benchmark. Model (2) is the preferred equation and it shows a cumulative elasticity of 0.45. This magnitude is in the ballpark of estimates from prior studies based on jurisdictionwide data, discussed above. The pattern of the coefficients suggests that most of the

[3] In practice, neither the county nor year fixed effects notably alter our elasticity estimates.

adjustment in assessed values occurs in 2-3 years, consistent with the idea that data and administrative lags delay assessment responses to market changes.

Table 2: Changes in Assessed Values and Changes in ZHVI

	(1)	(2)	(3)	(4)	(5)	(6)
	All Years		2007-2012		2013-2019	
Log change in ZHVI	0.285***	0.0654	0.224***	0.0131	-0.0614	-0.00806
	(0.0428)	(0.0520)	(0.0546)	(0.112)	(0.0814)	(0.0658)
Lag 1 log change in ZHVI		0.0346		0.0264		-0.00499
		(0.0687)		(0.109)		(0.0805)
Lag 2 log change in ZHVI		0.263***		0.276**		0.251***
		(0.0729)		(0.128)		(0.0854)
Lag 3 log change in ZHVI		0.0815**		0.125		0.0371
		(0.0388)		(0.0836)		(0.0490)
Constant	0.0494***	0.00858	0.0573***	0.0171*	0.00836	0.0189***
	(0.00994)	(0.00721)	(0.00957)	(0.0102)	(0.00607)	(0.00555)
Cumulative elasticity		0.445***		0.441***		0.275***
		(.057)		(.107)		(0.074)
Observations	177,474	110,996	51,862	13,882	125,612	97,114
R-squared	0.031	0.053	0.068	0.160	0.048	0.062

Notes: The dependent variable is the log change in the average assessed value in the zip code. All models include county and year fixed effects. Standard errors clustered by county are in parentheses.

We are interested in whether the response of assessed values to changes in market values was different during the Great Recession. We separate the data into before and after 2012, reflected in models (3) through (6). Note that the period up through 2012 includes all of our observations from the Great Recession. This is effectively two years worth of data, 2011 and

2012, given that our data begins in 2007 and we are using three lags of ZHVI changes. The post-recession period includes 2013 through 2019. We do see some evidence of greater responsiveness during the recession period, with a cumulative elasticity of 0.441, versus 0.275 after 2012, although we are hesitant to read too much into it given that the adjustment after two years is comparable in all cases, and differences in cumulative elasticity are largely due to variation insignificant coefficients in prior years.

Overall, the results of the zip code level analysis reveal slow adjustment of assessed values to housing prices, broadly comparable in magnitude to the elasticity estimates from the prior literature.

Assessment Lags and Tax Bills

In the preceding section we focused on assessments and housing prices without evaluating associated changes in tax burdens. We have emphasized that assessed values do not change mechanically with market values, but rather through the choices and practices of assessors and other local officials. As equation (2) and the related literature make clear, policymakers have another lever for influencing tax revenue through effective tax rates. In other words, changes in assessed values within a jurisdiction need not result in proportionate changes in taxes if tax and assessment limits intervene.

Table 3 examines changes in property tax obligations associated with changes in house prices, following the same format of Table 2. The dependent variable is the log of the average tax bill in the zip code. Looking across all years in model (2) the cumulative elasticity of tax obligations is 0.35, which is smaller than the cumulative elasticity of assessed values, 0.45, shown in Table 2. This difference is consistent with the idea that policymakers offset changes in assessed values with changes in the effective tax rate. The same appears to be true during the recession, as shown in model (4), and if anything the difference relative to the elasticity of assessed values is greater. This may be an indication that policymakers adjusted effective tax rates more aggressively during the recession to offset declines in assessed values. Interestingly, in post-recession years, the elasticity of tax bills is almost equal to the elasticity of assessed values, perhaps a sign that policymakers are less likely to counteract changes in assessed values with changes in effective tax rates during “normal” times. Given that many of the individual coefficients for lagged changes in ZHVI are insignificant, we are hesitant to make inferences about the specific timing of the adjustments in tax bills.

Table 3: Changes in Tax Bills and Changes in ZHVI

	(1)	(2)	(3)	(4)	(5)	(6)
	All Years		2007-2012		2013-2019	
Log change in ZHVI	0.137***	-0.0291	-0.0847	-0.255*	0.0158	0.0114
	(0.0486)	(0.0712)	(0.0803)	(0.150)	(0.0765)	(0.0546)
Lag 1 log change in ZHVI		0.200***		0.207		0.156***
		(0.0592)		(0.176)		(0.0523)
Lag 2 log change in ZHVI		0.109*		0.212		0.0660
		(0.0616)		(0.134)		(0.0527)
Lag 3 log change in ZHVI		0.0706		0.121		0.0394
		(0.0429)		(0.0918)		(0.0369)
Constant	0.0970***	0.0309***	0.0964***	0.0302***	0.0252***	0.0323***
	(0.0255)	(0.00924)	(0.0235)	(0.00929)	(0.00647)	(0.00563)
Cumulative elasticity		0.350***		0.285**		0.273***
		(.077)		(.107)		(0.046)
Observations	179,338	111,582	53,417	14,121	125,921	97,461
R-squared	0.019	0.029	0.072	0.345	0.025	0.029

Notes: The dependent variable is the log change in the average assessed value in the zip code. All models include county and year fixed effects. Standard errors clustered by county are in parentheses.

Sluggish Assessments and Vertical Equity

The slow response of assessed values and tax bills to changes in home prices may have important implications for the distribution of the tax burden within the jurisdiction. When there is variation in price appreciation within a jurisdiction, assessment lags will shift the tax burden from faster growing neighborhoods onto slower growing neighborhoods. That is, as a neighborhood appreciates, assessed values will increasingly fall below market values, and this will be more true the faster the neighborhood is appreciating. In depreciating neighborhoods, the opposite should happen. Taken together, these trends imply that the tax burden within a jurisdiction will shift from fast-growing to slow-growing neighborhoods over time when assessments are slow to reflect market trends. This is precisely the pattern Hou et al. (2021) described in Philadelphia, for example.

Whether sluggish assessments ultimately increase or decrease vertical equity will depend on which houses are experiencing faster and slower appreciation. Specifically, it will depend on the nature of the correlation, if any, between initial housing values and subsequent appreciation. If houses that were more expensive initially also experience faster appreciation, this will lead to regressivity in tax burdens, as the most expensive houses experience gradual reductions in their effective tax rates. I will refer to this pattern as home value *divergence*. On the other hand, if houses that were initially less expensive subsequently experience faster appreciation, this should lead to more progressivity in property taxation, at least up until the point that the initially low-priced properties surpass the average price in the jurisdiction. I will refer to this pattern as home value *convergence*.

Whether housing values converge or diverge within a jurisdiction over time is an empirical question whose answer may vary across time and place. While there is a substantial literature on housing price convergence across places, less attention has been devoted to within-city price convergence. Two prominent studies find that neighborhood prices generally converge (i.e., initially lower-priced neighborhoods experience faster subsequent growth), although the pattern may vary depending on the neighborhood's placement within the city and the nature of the citywide housing cycle at the time (Hurst et al. 2013; Glaeser et al. 2012).

To better understand how neighborhood level housing trends may impact the distribution of the property tax burden within jurisdictions, we estimate county-level models of housing price convergence. Specifically, we regress changes in the zip codel-level ZHVI over time against the initial level of the ZHVI. Within each county we regress 5-year log changes in ZHVI against the starting log ZVHI for each year in our data. For instance, we regress the log change in ZHVI from 2007 to 2012 against log 2007 ZHVI, 2008 to 2013 log changes against 2008 log ZHVI, and so on. We run the regressions separately for each county, resulting in 53,987 county-by-year estimates of zip code price convergence from 2000 through 2023, using the entire ZHVI zip code data set.

On average, we find that prices have been converging over time, as the median coefficient is -.039. Forty-four percent of the county-year coefficients are statistically significant. Figure 2 presents box plots of the county-level estimates, by year. Observations are weighted by the number of zip codes in the county, although nothing changes qualitatively if we use unweighted data or restrict the analysis to counties where the association between growth and starting values was statistically significant.

Interestingly, the median coefficient implies convergence in all years except 2010 through 2014. This may reflect the fact that initially low-valued neighborhoods were hit hardest by the foreclosure crisis, which led to an exceptional period of housing price divergence in many localities. Since 2015, however, price convergence again appears to be the norm. We note that this pattern remains even when we restrict consideration to coefficients that are statistically significant.

Importantly, in all years there is a great deal of variation across places. Although the median county is experiencing price convergence in most years, there are both converging and diverging counties every year. There is also a clear trend toward divergence during the Great Recession, and a return to convergence thereafter. This result is consistent with the idea that lower income neighborhoods were hit harder by the foreclosure crisis during that period. Despite this evident trend, however, perhaps the bigger takeaway from the analysis is that there is enormous heterogeneity across counties, with some experiencing divergence and others convergence at any given moment.

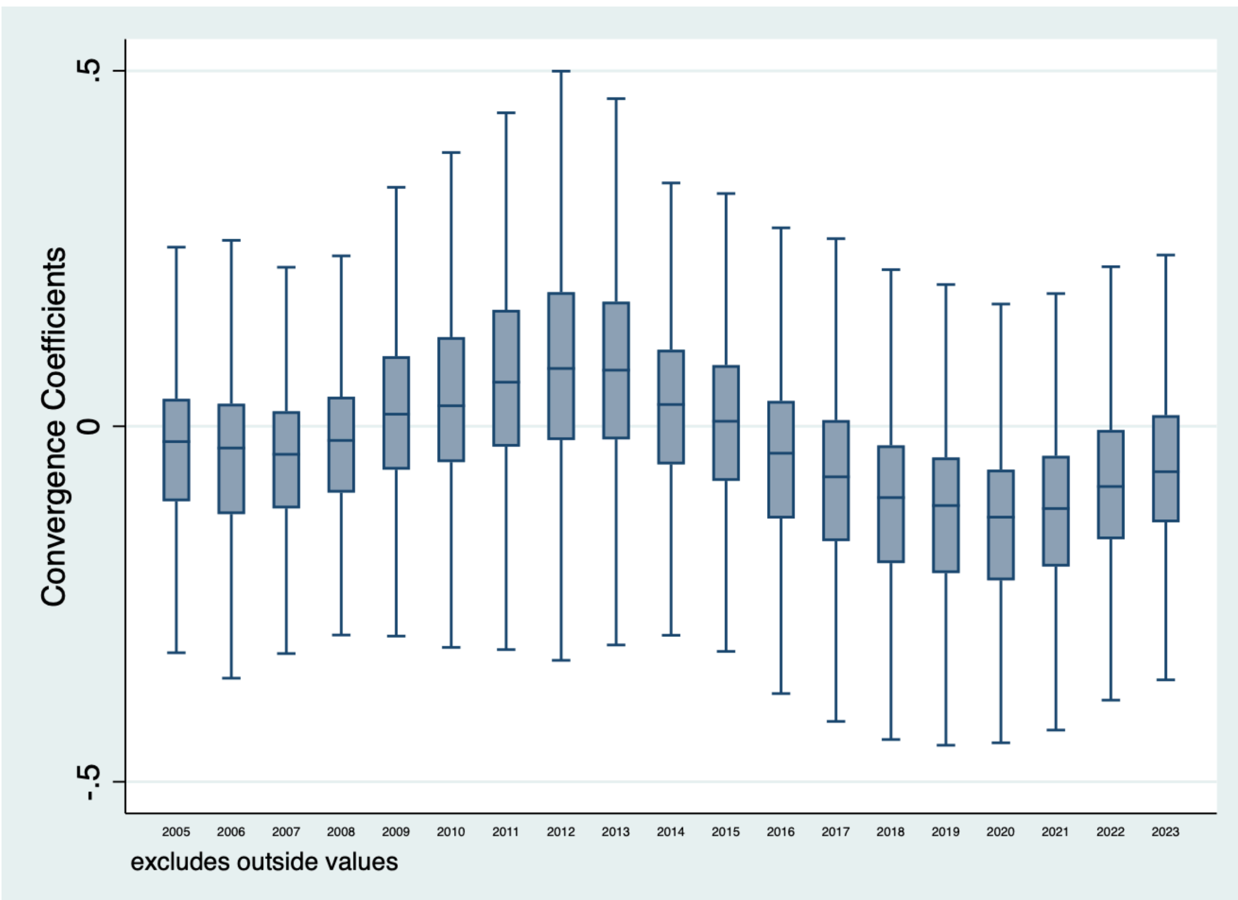

Figure 2: Distribution of County-level Housing Price Convergence Coefficients, by Year

Notes: Coefficients from a zip-code level regression of 5-year log changes in ZHVI against starting log ZHVI, estimated separately by county and year. Weighted by the number of zip codes in the county.

The great variation evident in Figure 1 suggests that there is not a universal answer as to whether sluggish assessments increase or decrease vertical equity. To the extent that neighborhood convergence is the prevailing pattern, we should expect sluggish assessments to introduce progressivity into local property taxes. However, this pattern may have been reversed in many places during the Great Recession when many housing markets experienced divergence in housing prices. To ascertain whether vertical equity in assessments tracks price convergence and divergence, we next computed county-level measures of the *price-related differential* (PRD), a standard metric of vertical equity in assessments. The PRD is defined as the mean assessment ratio divided by the weighted mean ratio, where weights are based on sale price. A PRD over 1 implies that assessment ratios are higher for lower priced properties, an indication of regressivity. We computed the PRD for each county in each year using Corelogic data, yielding 27,271 county-year PRD estimates from 2007 through 2019. We restrict attention to the 21,071 county-years with at least 100 transactions in Corelogic data. Box plots of those county-level PRD estimates, by year, are shown Figure 3.

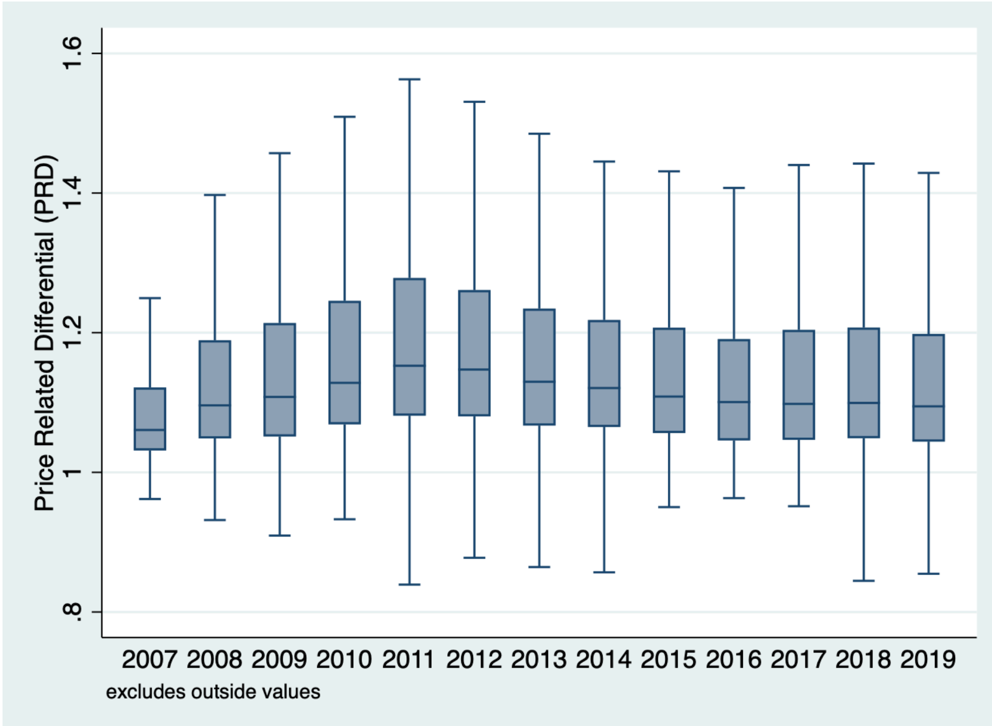

Figure 3: County-level assessment regressivity
Notes: Box plots of county-level PRDs for all county-years with at least 100 transactions.

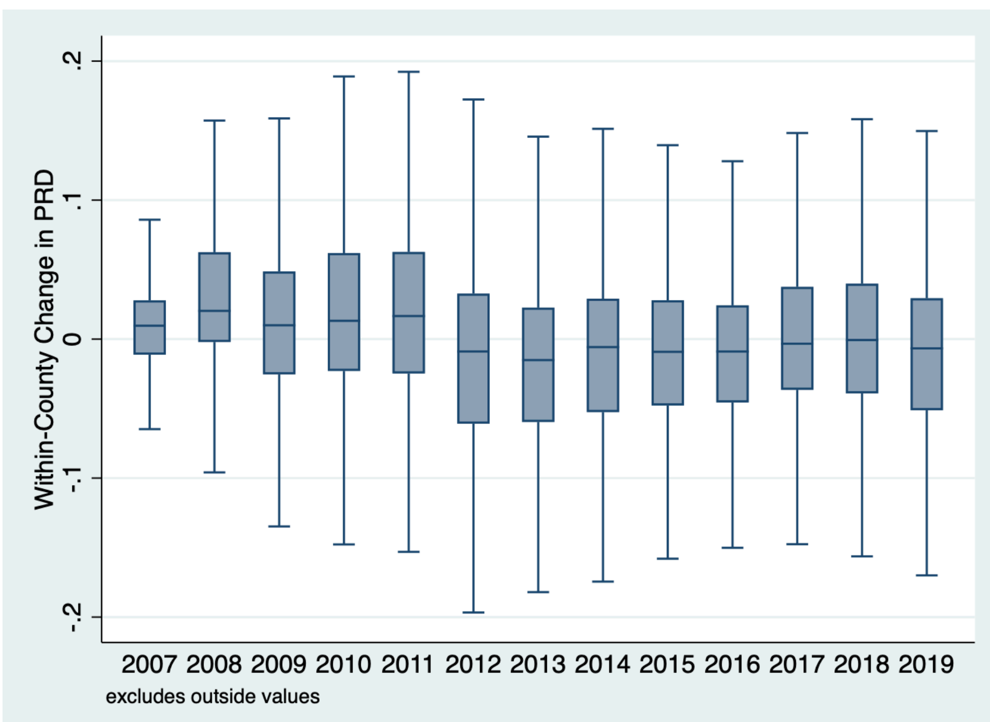

Figure 4: Within-county changes assessment regressivity
Notes: Box plots of within-county changes PRDs for all county-years with at least 100 transactions.

The first result evident from Figure 3 is that most counties have regressive assessments in most years. The average PRD is 1.25 and the median is 1.12, both well above the range considered to be acceptable (IAAO 2013). This result is consistent with growing evidence of property tax regressivity (Avenancio-Leon and Howard 2021; Berry 2022). Of more immediate interest here, there is a notable uptick in county level PRDs during the Great Recession, roughly at the same time as counties were experiencing increasing divergence in neighborhood housing prices. These trends are consistent with the idea that sluggish assessments mechanically lead to increasing regressivity during periods when low-priced neighborhoods are experiencing relative price declines.

We would like to be certain that the patterns evident in Figure 3 represent changes in PRDs within counties, not a changing composition of counties represented in Corelogic. Therefore, we next consider within-county changes in PRD over time. Figure 4 presents box plots of year-over-year within-county changes in PRD. The median county experienced increases in PRD from 2007 through 2011, and decreases thereafter. As evident, there is significant variation across counties, with many experiencing increases and decreases in any given year.

The trends in county-level PRDs are consistent with the idea that periods of housing price divergence coupled with sluggish reassessment leads to increasing inequity in assessment ratios. However, we emphasize that these results do not establish causation between assessment lags and assessment regressivity, but only the temporal correlation.

Summary and Discussion

The prior literature on property tax responses to housing price fluctuations has focused primarily on comparisons between jurisdictions. We change the lens to focus on within-county variation in assessed values related to changing housing prices. Our overall estimates of the long-run elasticity of assessed values to housing prices is roughly 0.45, which is consistent with magnitudes reported in prior studies using more aggregated data.We also find that property tax bills are somewhat less responsive to housing price changes than are assessed values, possibly an indication that policymakers offset changes in the tax base with changes in effective tax rates, another theme from the prior literature.

We next investigated the possibility that sluggish assessments will lead to inequity in property tax assessments. If assessed values are held in place as housing values change, neighborhoods experiencing housing price appreciation will gradually become underassessed, while neighborhoods experiencing housing price declines will become overassessed. Whether this dynamic leads to regressivity in property taxes depends on whether the jurisdiction is experiencing housing price convergence or divergence. While we find that convergence is empirically more common, we see large numbers of counties in either situation each year. As such, there is no generic answer as to the implications of sluggish assessments for property tax equity. However, during the Great Recession we saw evidence of both increasing housing price divergence and increasing property tax regressivity within counties.

This collection of findings suggests that increasing assessment elasticity with respect to housing prices can either enhance or reduce equity in property taxation, depending on the local context and in particular depending on whether the locality is experiencing housing price convergence or divergence. Given that we find housing price convergence to be the more common situation, and certainly so in more recent years, our findings suggest that improving reassessment frequency and may not lead to improvement in vertical equity in most places.

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