The Impact of the State and Local Tax (SALT) Deduction Cap on U.S. Home Prices[1]

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ABSTRACT

The *Tax Cuts and Jobs Act of 2017* fundamentally changed the federal tax treatment of state and local tax (SALT) deductions that had underpinned the federal fiscal policies promoting homeownership and state/local government finance for over 100 years. The SALT deductions are limited by a new cap of $10,000, effective 2018. The unique impact of the new SALT deduction cap on home prices is assessed using a difference-in-difference estimation approach on the 2017 IRS data and 2013-2020 panel data sets collected annually from 945 counties that cover 83 percent of the U.S. population. After controlling for the effects of housing market fundamentals and other factors across various counties and over time, the results indicate that, by increasing user cost of owning homes, the SALT deduction cap had a significant negative impact on home prices in high-SALT counties (where the average SALT deductions claimed in 2017 were greater than $10,000). The cap reduced their annual home price growth rate by 0.79 percentage points, representing a reduction of nearly one-fourth of the U.S. historical growth rate per year. The hardest hit were the expensive homes in the high-SALT and high-cost counties, as the SALT cap slashed their annual price growth rate by 0.95 percentage points. The results further indicate that, among four state and local tax types (income, real estate, sales and personal property), state and local income tax had the strongest effect on home price movements with the SALT cap in place, both economically and statistically. Real estate tax also had a significant impact. In addition, these home price impacts were not altered by the coronavirus pandemic in 2020. This study has important implications for mobility and mortgage finance.

I. Introduction

Enacted in December 2017, the *Tax Cuts and Jobs Act of 2017* (TCJA) has produced the most sweeping tax law changes in the United States since 1986. The changes affect U.S. taxpayers in numerous ways, regardless of their status as a corporate or a household filer. As for households, in particular, the TCJA dramatically changed the federal tax treatment of state and local taxes (SALT) deductions, which had underpinned the federal fiscal policies promoting homeownership and state and local government finance in the United Stated for over 100 years. Before the TCJA passed in December 2017, the SALT payments by the homeowners qualified for itemized federal tax deductions without any explicit limitation on the dollar amount. After the TCJA took effect in January 2018, however, the combined federal tax deductibility of state and local taxes or SALT (consisting of state and local income tax or general sales tax, real estate tax and personal property tax) has been capped at $10,000. The cap applies to tax years 2018 to 2025. This new SALT deduction cap is, arguably, quite a consequential tax code change related to housing as it appears to be capable of fundamentally altering the dynamics of the U.S. residential housing markets.

Theoretically, the new $10,000 cap placed on the SALT deductibility by the TCJA is expected to increase user costs of capital for owning high-priced homes and shift housing demand from high-cost high-tax areas to low-cost low-tax areas, which consequently should lead to significant changes in the dynamics of home price movements in the post-TCJA era. Although anecdotal, indirect or simulation-based evidence has emerged that seems to support some of these inferences, very little comprehensive and conclusive empirical evidence has been provided so far to test these hypotheses by examining statistically significant changes that the new SALT deduction cap may have brought to the various segments of home prices across the country. An exception is the paper completed by Li and Yu of Federal Reserve Bank of Philadelphia in late 2020.

This research is one of the first empirical studies that assesses and quantifies the unique impact of the TCJA's tax treatments for SALT deductions on annual home price growth at the county level. In this paper, I first present an overview of methodology used for this research as well as a brief review of theoretical and empirical literature on policy impact analysis and housing price dynamics. Then, the empirical model specifications, sensitivity analysis and data sets are discussed in detail. Following a snapshot on home price movements for counties stratified by the SALT deduction cap, the results of regression models based on the 2013-2020 panel data sets collected annually from 945 counties are

then given. The next section discusses the important empirical findings, including the home price impact of the SALT cap across all counties, home types hardest hit by the SALT cap, and state/local tax types with the strongest effects on home price growth. It then draws out implications for changes on housing market dynamics, mobility and mortgage finance. The last section concludes and also discusses contributions of this paper.

II. Hypotheses, Research Methodology and Literature Review

The hypotheses tested in this paper are: (1). As the new SALT deduction cap of $10,000 effectively increases user costs of owner-occupied homes, the cap should have reduced demand for owning expensive homes and homes in high-tax high-housing-cost areas and, consequently, adversely affected their home price growth. (2). Among all the state and local tax types (income, sales, real estate and personal property taxes), income and real estate taxes should have the strongest negative impact on home price appreciation, reflecting the crowding out effect under the SALT deduction cap of $10,000.

The primary methodology of assessing policy impact in the literature is the so-called intervention analysis or impact analysis (sometimes also called as "event study" in the business, finance, law, and IT worlds). The basic form of intervention analysis is the before-after approach or pretest-posttest experimental design (Bonate 2000). It is often carried out by using an interrupted time series model with an intervention indicator to detect inter-temporal differences between pre- and post-intervention. However, this approach is often criticized as unreliable and inaccurate, in that it fails to partition out the impact of the intervention (input series) from effects of other significant important historical events and/or underlying market forces that may also affect the response series at approximately the same time. This basic approach is thus vulnerable to the common threat to internal validity that precludes confirmation of a causal relationship between input (intervention) and response (impact) in a time series quasi-experiment (Cook and Campbell 1979). Therefore, establishing sufficient protection against possible alternative impacts on the process to ensure internal validity is often the most important and most challenging task for almost any intervention or impact analysis (Yaffee 2000).

To ensure internal validity of the SALT cap impact analysis, this research adopts a difference-in-difference estimation approach and uses panel data sets to build regression models. A paper that assesses the impact of Washington, DC's first-time homebuyer tax credit program on home prices (Tong 2005) is one of the examples of applying tax policy intervention analysis into housing markets

with the difference-in-difference approach. Built upon this literature, the difference-in-difference in this paper is designed as follows: The high-SALT counties or those with county average SALT deduction amount greater than $10,000 in 2017 are viewed as the "treatment group", while low-SALT counties (with average SALT amount less than $10,000 in 2017) are the "comparison group." By comparing the before-after TCJA difference in home price growth rates for the treatment group to that for the comparison group, this difference-in-difference estimation methodology allows for the control of possible alternative historical impacts on real estate price movement. Moreover, the regression models are based on the dynamic panel data sets collected from various sources at county level. By controlling for the effects of such explanatory variables as housing demand and housing supply determinants across counties and over time, the panel-data regression models isolate the SALT cap impact on home prices from the possible alternative impacts of the underlying housing market fundamentals.

The key explanatory variables are the TCJA intervention, as well as SALT variables, while other controlling explanatory variables included in the models are main determinants or drivers of home price dynamics that are already well documented in the literature. There is a large body of literature on modeling the drivers or determinants of home price dynamics across localities and over time. Widely cited papers in this line of work include Muth (1960), Case and Shiller (1988), Kain and Apgar (1979), Follain (1979), Blackley and Follain (1991), Cho (1996), Blackley (1998), Malpezzi (1996) and (1999), Capozza et al (2002), Harter-Dreiman (2004), and Follain (2010). Most of the literature focuses on explaining the response of home prices to shocks stemming from changes in main drivers of housing demand, which typically include lagged growth in population, employment, personal income and market size, as well as mortgage interest rate. Except for mortgage rates, determinants of housing demand are typically specified by their lagged (previous year's) values so that their causal relationships with the dependent variable (home price changes) are correctly established.

Moreover, the literature also recognizes housing supply as a key driver of home price movements. The long-term housing supply driver is best measured by the replacement costs of existing homes or the construction cost of new homes, which are represented mainly by the land costs of building residential real estate. If land cost in a market is high, it often means either space for additional housing is scarce or the regulatory environment is not supportive of additional housing in this jurisdiction. As a result, expansion of the housing supply is inhibited, and substantial and sustained home price increases are possible. The short-term housing supply driver is best measured by the number of single-family building permits divided by population size. This supply variable is also

specified as the lagged value, given that the average time from authorization to completion in the U.S. ranges from 8 months (for single-family buildings) to about 12 months (for buildings with 2-4 units).

Furthermore, the literature has shown that house prices exhibit systematic short-run and long-run behavior: a positive serial correlation in the short run and a negative serial correlation, or mean reversion, in the long run. The positive serial correlation in the short-run is largely caused by the backwards-looking expectations of market participants (especially home buyers), indicating that the housing market is not informationally efficient in the short run. Empirically, in modeling home price appreciation annually, the first-order lag (previous year's price appreciation) is often used to capture the short-run serial correlation.

Finally, controlling for the effects of historical events and policy interventions on home prices is critical. The coronavirus pandemic may also have substantially influenced the U.S. housing markets in 2020 when the SALT deduction cap was in place. The TCJA's reduction of mortgage rate deductibility to balances less than $750,000 from the previous cap of $1 million needs to be accounted for as well. Moreover, incorporating the fixed effects of location is technically important to capture the impact of unobserved location-specific characteristics, events, and systematic differences in housing price dynamics across locations.

In sum, by incorporating these well-documented main determinants of home price dynamics, observed historical events and policy interventions, as well as fixed location effects into the before-after TCJA intervention analysis, the regression models isolate both observed concurrent historical impacts and unobserved fixed effects that are not from the TCJA's changes on SALT treatments. Consequently, alternative explanations of home price changes following the TCJA intervention can be ruled out, and the impact of the SALT deduction cap on home prices can be demonstrated.

III. Models, Sensitivity Analysis and Data

A. Empirical Models

Following the above discussions on methodologies and literature, two models are constructed to test the hypotheses raised earlier. Model I is built upon the theory that annual home price growth rate is a function of housing demand (including mortgage rates and lagged growth on employment, population, personal income and market size), housing supply (represented by building permits and land cost), historical events, policy interventions, serial correlation (backwards-looking expectations) and location

fixed effects. After controlling for these factors, the model tests the hypothesis I that average home prices in all counties are significantly affected by the SALT deduction cap under the TCJA. One may assume that the rational and informed owners/buyers of high-priced homes in the TCJA era would likely choose downsizing or moving away from the high-SALT counties if there is a choice, so as to minimize the user cost or loss of the SALT deduction benefits under the TCJA. This model can be expressed mathematically as follows:

Model I: $$H_{ti} = \alpha + \beta_1 E_{(t-1)i} + \beta_2 P_{(t-1)i} + \beta_3 I_{(t-1)i} + \beta_4 S_{(t-1)i} + \beta_5 R_t + \beta_6 BP_{(t-1)i} + \beta_7 LC_{(t-1)i} + \beta_8 H_{(t-1)i} + \beta_9 L_j + \beta_{10} TCJA + \beta_{11} SALT_i + \beta_{12} MTG_i + \beta_{13} COVID + \beta_{14} (SALT_i * TCJA) + \beta_{15} (MTG_i * TCJA) + \beta_{16} (COVID * TCJA) + \varepsilon$$

Where

α = intercept, β = coefficient, ε = residual (error)

t = year 2013, 2014, 2015, 2016, 2017, 2018, 2019 or 2020

Dependent variable:

H_{ti} = Home price growth rate in county i in year t.

Explanatory variables for housing demand:

$E_{(t-1)i}$ = Lagged (previous year's) employment growth rate in county i.

$P_{(t-1)i}$ = Lagged (previous year's) population growth rate in county i.

$I_{(t-1)i}$ = Lagged (previous year's) per capita personal income growth rate in county i.

$S_{(t-1)i}$ = Lagged (previous year's) county size, measured by county population in county i.

R_t = 30-year fixed mortgage rates in year t.

Explanatory variables for housing supply:

$BP_{(t-1)i}$ = Lagged single-family building permits per 10,000 people in county i.

$LC_{(t-1)i}$ = Lagged land cost in county i, measured by average land value per acre.

Explanatory variables for serial correlation and fixed effects:

$H_{(t-1)i}$ = Lagged (previous year's) home price growth rate in county i.

L_j = Location fixed effect, measured by 50 dummy variables (1 for state j where the county is located, 0 otherwise; j represents a state or the District of Columbia).

Explanatory variables for TCJA Interventions and historical events:

TCJA = Dummy variable for the time series interruption by the TCJA intervention (1 for 2018 - 2020 when TCJA was in effect, 0 for 2017 and prior years when TCJA was not in effect).

$SALT_i$ = Dummy variable for SALT deduction cap in county i (1 for counties with average state and local tax deduction amount in 2017 > $10,000, and 0 otherwise).

MTG_i = Mortgage interest paid amount for deduction in county i, as percent of county aggregate AGI in 2017.

COVID = Dummy variable for Covid-19 pandemic (1 for 2020, and 0 for 2019 or earlier)

$SALT_i$*TCJA = Interaction term, representing the net effect of state and local tax deduction cap on home price growth rate under the TCJA. It measures the difference in difference, i.e., the pre- and post-TCJA difference in home price growth rate for high-SALT counties as compared to those in low-SALT counties.

MTG_i *TCJA = Interaction term, measuring the net effect of mortgage interest paid amount in county I from the TCJA intervention.

COVID*$SALT_i$ = Interaction term, representing the net effect of Covid-19 pandemic on home price growth rates in high-SALT counties relative to low-SALT counties.

To test the hypothesis II, Model II replaces the aggregate SALT cap variable in Model I with four specific SALT variables. The SALT contains state and local income tax, general sales tax, real estate tax and personal property tax. This model attempts to identify which state/local tax type has the strongest home price effects and the magnitude of the impact with the SALT cap in effect under the TCJA. The hypothesis is that the areas with higher real estate tax burdens should sustain more losses of the SALT deduction benefits under the TCJA, consequently discouraging some existing homeowners (especially some owners of the expensive homes) from keeping their homes or trading-up and homebuyers from purchasing new homes there if they have choices. By the same token, a similar effect could also occur in the areas with higher state/local income tax burdens in that real estate tax deductibility for homeowners in these areas would be reduced or even crowded out by their state/local income tax deductions under the combined SALT deduction cap of $10,000. Thus, if feasible, a rational homeowner or homebuyer would be more likely to choose to purchase homes or keep their homes in the areas with zero or low state/local income tax burdens to maximize their real estate tax deductions with the SALT cap in place under the TCJA. Mathematically, Model II can be expressed as follows:

Model II: $$H_{ti} = \alpha + \beta_1 E_{(t-1)i} + \beta_2 P_{(t-1)i} + \beta_3 I_{(t-1)i} + \beta_4 S_{(t-1)i} + \beta_5 R_t + \beta_6 BP_{(t-1)i} + \beta_7 LC_{(t-1)i} + \beta_8 H_{(t-1)i}$$

$$+ \beta_9 L_j + \beta_{10}TCJA + \beta_{11}SALT\_I_i + \beta_{12}SALT\_S_i + \beta_{13}SALT\_R_i + \beta_{14}SALT\_P_i + \beta_{15}MTG_i + \beta_{16}COVID + \beta_{17}(SALT\_I_i*TCJA) + \beta_{18}(SALT\_S_i*TCJA) + \beta_{19}(SALT\_R_i*TCJA) + \beta_{20}(SALT\_P_i*TCJA) + \beta_{21}(MTG_i*TCJA) + \beta_{22}(COVID*TCJA) + \varepsilon$$

Where

All variables are the same as Model I except that the variable SALT is replaced by four specific SALT types.

$SALT\_I_i$ = State and local income tax deduction amount in county i (as % of AGI in 2017).

$SALT\_S_i$ = State and local general sales tax deduction amount in county i (as % of AGI in 2017).

$SALT\_R_i$ = State and local real estate tax deduction amount in county i (as % of AGI in 2017).

$SALT\_P_i$ = State and local personal property tax deduction amount in county i (as % of AGI in 2017).

$SALT\_I_i*TCJA$ = Interaction term, measuring the net effect of state/local income tax deduction from the TCJA intervention.

$SALT\_S_i*TCJA$ = Interaction term, measuring the effect of state/local sales tax deduction from the TCJA intervention.

$SALT\_R_i*TCJA$ = Interaction term, measuring the effect of state/local real estate tax deduction from the TCJA intervention.

$SALT\_P_i*TCJA$ = Interaction term, measuring the effect of state/local personal property tax deduction from the TCJA intervention.

B. Sensitivity Analysis

The above two models will be implemented primarily by regressing growth rates of average home prices for all counties in the pooled sample. To conduct sensitivity analysis, the two models are further executed by segmenting price tiers for homes and housing cost levels for counties. Specifically, the additional regression models are run by regressing annual growth rates for the most expensive home price tier (for top 20 percent quantile) and least expensive home price tier (for bottom 20 percent quantile) in high-cost counties as well as in low-cost counties, separately. The purposes of conducting these sensitivity analyses are to examine the robustness of these models and also to estimate how home price growth in different housing market segments responds to the SALT cap under the TCJA differently.

In other words, since the home price impact of the new SALT cap is expected to differ between expensive areas and less costly housing markets, the regression analysis is performed not only for all 945 counties in the pooled sample but also for high-cost counties (where county average home prices in 2017 were higher than the national average) and low-cost counties. In an effort to disentangle the responses of various home price tiers to the new SALT deduction cap, the dependent variables for the regression analysis are measured as annual growth rates for average prices of all homes, the most expensive homes and the least expensive homes.

C. Data

The data collection and unit of analysis for this study are set primarily at county or county equivalent level. As "SALT" refers to the combination of income, sales, real estate and personal property taxes levied by governments of states and counties (or county equivalents), SALT burden varies substantially not only across states but also cross counties. The data sets collected for this study cover 945 counties (or county equivalents) with valid annual data spanning from 2013 to 2020. Although the number of counties included in the pooled sample accounts for only 30 percent of all U.S. counties or county equivalents, their combined populations in 2017 accounted for 83 percent or the vast majority of the U.S. population in the same year. All the annual data are collected at county level for these 945 counties, except for mortgage rates that are from the national level but applied to all counties. The data on annual home price growth rates in years 2013 through 2020, their lags (i.e., growth rates in prior years), as well as housing cost determinations and home price segmentations, are all calculated from the seasonally adjusted series of the Black Knight Home Price Index, a database publicly accessible through subscription.

As for the explanatory variables, annual data for lagged growth rates on employment, population, and per capita personal income are calculated from the administrative data sets compiled by the federal government agencies (BLS and BEA). Market size is based on the population data for counties released by the BEA. The 30-year fixed mortgage rates are from Freddie Mac to control for the effect of mortgage financing and affordability. Information on average land values per acre comes from a study released by the FHFA (Davis, Larson, Oliner and Shui 2019, with data updated in 2020), while building permits divided by population size are calculated from the Census data. Finally, data for county-level Adjusted Gross Income (AGI) and all the SALT variables are calculated from the IRS

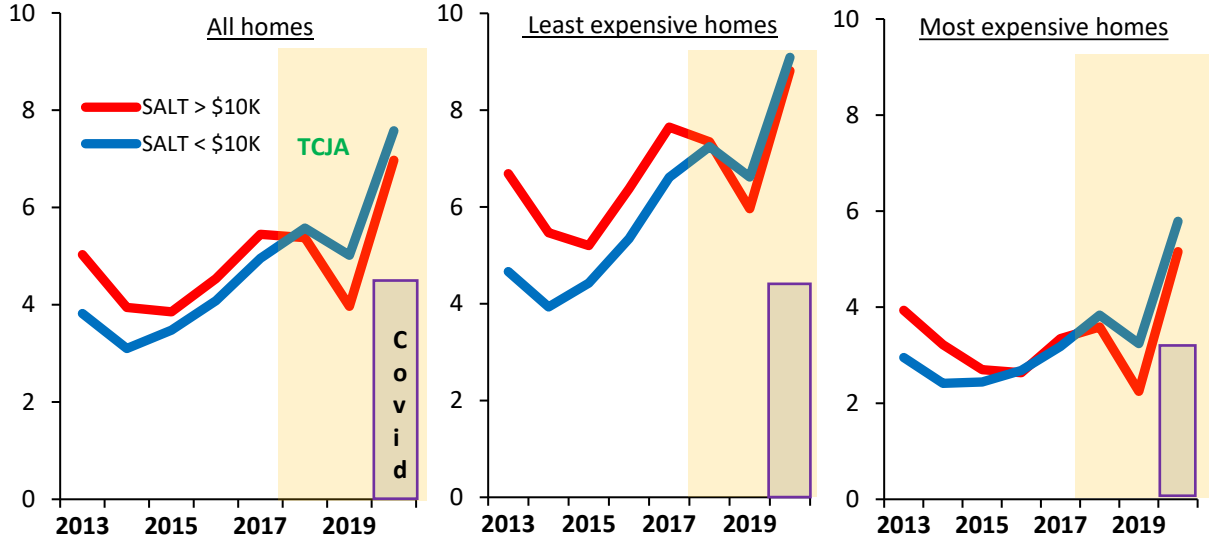
Individual Income Tax Return database for counties and county equivalents in 2017, the year prior to the SALT cap taking effect under the TCJA.

IV. Descriptive Analysis: A Snapshot on Home Price Growth by SALT Deductions

Before the TCJA passed, average annual home price growth rates in the high-SALT counties (where the average SALT deduction amount claimed in 2017 was above $10,000) were consistently higher than or similar to the low-SALT counties (where the average SALT deduction amount claimed in 2017 was below $10,000), as shown in the Figure 1. However, since the TCJA took effect in 2018, the annual home price growth rates in the high-SALT counties have suddenly turned lower than the low-SALT counties, regardless of home price tiers. And with some variations, this change occurred across various housing markets segmented by home price tiers (for all, least expensive and most expensive homes) and housing cost levels (for all, high-cost and low-cost counties), as illustrated in Figures 2 and 3. Moreover, the largest growth rate reductions since 2018 were observed in the prices of the most expensive homes that are located in high-SALT and high-cost counties. These snapshots for descriptive analysis suggest that the SALT deduction cap of $10,000 had substantial adverse effects on home prices in the high-SALT counties after the TCJA took effect in 2018, with the high-priced homes in high-cost areas hit hardest. Are these effects attributable exclusively to the SALT deduction cap set by the TCJA? Are they statistically significant? Can they be quantified? These questions are addressed in the next section on results from regression analyses.

Figure 1. All counties: Home price growth by price tier and 2017 average SALT deductions

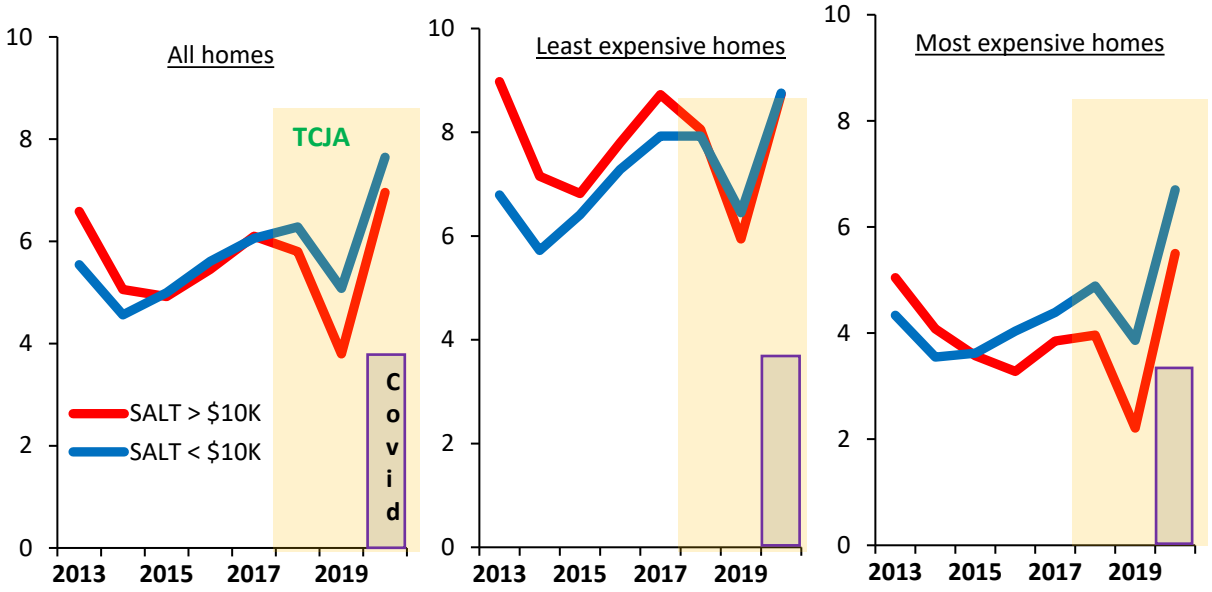
County average annual home price growth rate, %



Source: Calculated from the 2017 IRS Individual Tax Return and Black Knight HPI databases.

Figure 2. High-cost counties: Home price growth by price tier and 2017 average SALT deductions

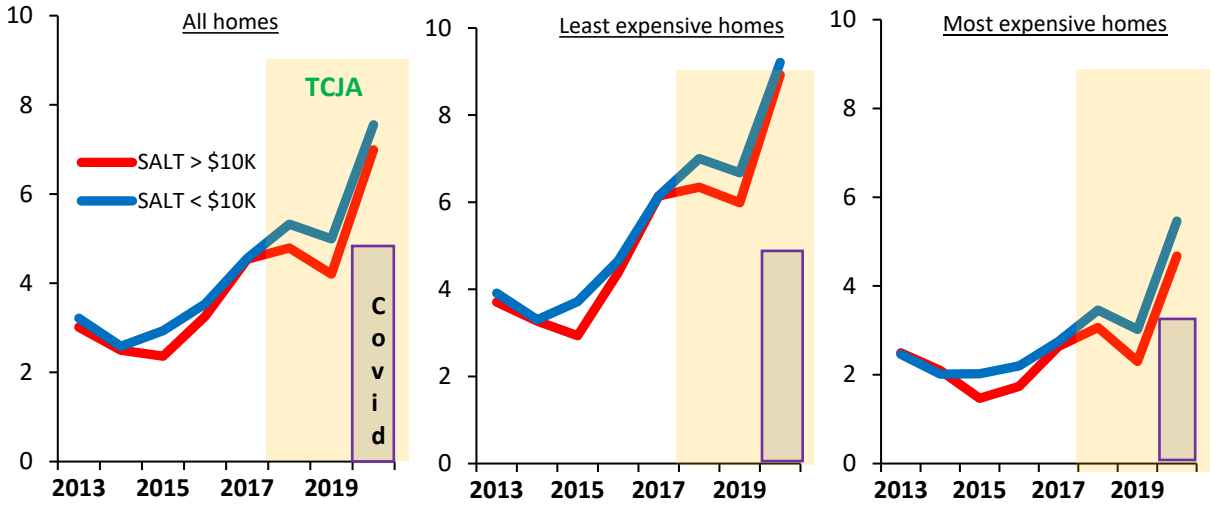
County average annual home price growth rate, %



Source: Calculated from the 2017 IRS Individual Tax Return and Black Knight HPI databases.

Figure 3. Low-cost counties: Home price growth by price tier and 2017 average SALT deductions

County average annual home price growth rate, %



Source: Calculated from the 2017 IRS Individual Tax Return and Black Knight HPI databases.

It should be noted that, although the home price impact of the SALT deductibility changes appears to be negative for high-SALT counties in the TCJA era, its magnitude seems to vary over time. This negative impact started hitting housing markets in 2018, was very strong in 2019, and still remained in effect in 2020 despite somewhat weakened by the shock from the coronavirus pandemic. This impact trajectory likely stems from a changing course of taxpayers' understanding of the TCJA's effects on their own financials. Although 2018 was the first year of the TCJA implementation, the

2018 tax returns could not be filed until early 2019. Thus, the filing of tax returns in early 2019 served as a wakeup call for taxpayers, including potential homebuyers and sellers. Before that, many taxpayers may not have been fully aware of the actual adverse effects of the new SALT deduction cap on their own itemized deductions. After that, however, taxpayers attempting to file itemized tax deductions fully observed their bottom line implications, which apparently triggered more households to adapt to the new tax system in their housing choices in an effort to minimize the loss of the pre-TCJA homeownership tax benefits from the SALT deductions.

V. Empirical Findings from Regression Models

The empirical results from the implementations of the two models as well as their sensitivity analyses are tabulated in Tables 1-4. They show that these models and their associated sensitivity analyses have strong explanatory power. Adjusted R-squared or the coefficients of determination range from 0.4764 to 0.6277, indicating that the independent (explanatory) variables included in the models can explain 47.6 – 62.8 percent of the total variance for annual home price growth rates as observed. I have also conducted regression diagnostics, removed outliers, examined Variance Inflation Factor and found no multicollinearity problems among the variables. Most control variables are statistically significant at $p<0.05$ level and have expected signs in predicting the annual home price growth rates for the majority of the models and their sensitivity analyses. Statistically significant variables with expected signs include the first-order serial correlation variable (lagged home price growth rate), determinants of housing demand (lagged annual growth rates on employment, per capita personal income and population and county size), determinants of housing supply (single-family building permits divided by population size and lagged land value), historical events and other reforms (Covid-19 pandemic shock and TCJA's reduction on mortgage interest deductions), as well as location fixed effects. The only exception is the housing demand explanatory variable "30-year fixed mortgage rate", which is statistically significant but has somewhat unexpected (positive) signs in all the models.

The key variables for this study, i.e., the interaction terms of SALT deduction cap dummy variable with the TCJA dummy, have expected signs and are statistically significant across Model I and all of its sensitivity analyses, except for the interaction term for the least expensive homes in low-cost counties. For Model II, all the interaction terms of SALT-specific type variables (income, real estate, sales and personal property taxes) with the TCJA indicator are statistically significant and also have expected signs, except for the interaction terms for the personal property tax with TCJA. The

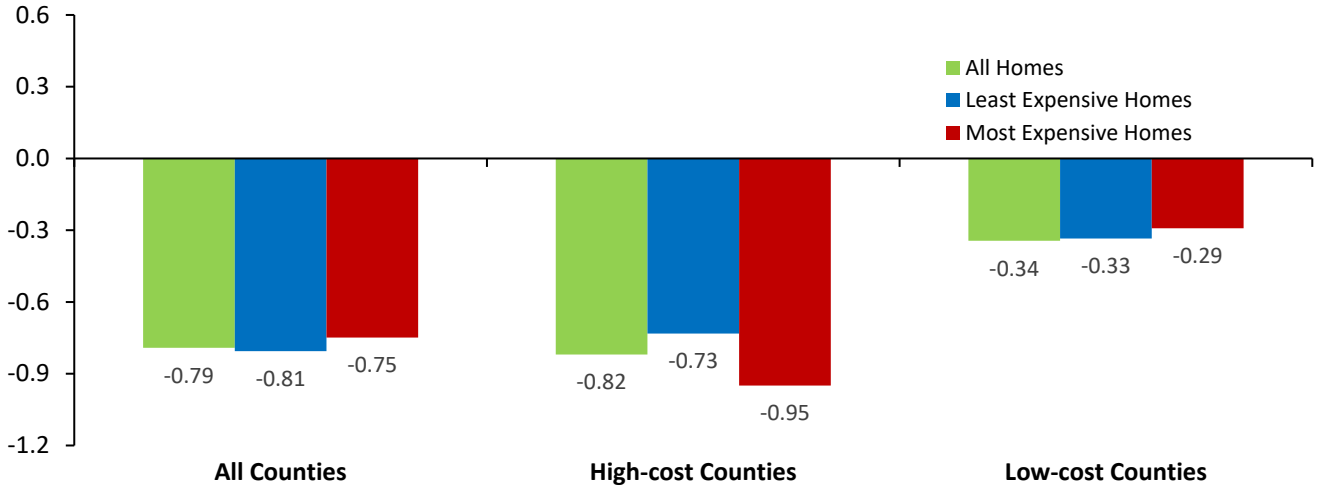
detailed interpretations of the key empirical findings based on these interaction terms are discussed below.

A. The Impact of the New SALT Deduction Cap across All Counties

In the TCJA era (2018 -2020), the new SALT deduction cap of $10,000 is found to be statistically significant with a negative impact on home price growth in the high-SALT counties according to the empirical results from regression analyses. After controlling for the effects of housing demand factors, housing supply drivers, housing market information inefficiency in short-run, historical events and fixed location, the regression analysis uses the interaction term (SALT*TCJA) in Model 1 to measure the net effect of new SALT deduction cap by comparing the difference in average annual home price growth rate between pre- and post-TCJA periods for high-SALT counties with that for low-SALT counties. As shown in Table 1 and illustrated in Figure 4, the analysis results from Model 1 for all counties indicate that the net effect on annual home price growth rates for all homes was a 0.79 percentage point reduction in the high-SALT counties relative to those in the low-SALT counties. The calculations using the 1891-2018 data from Robert Shiller (in his book Irrational Exuberance and online) find that, historically, the nominal price of U.S. homes grows at an average rate of 3.46 percent per year. Hence, the 0.79 percentage point reduction on annual home price growth in the high-SALT counties due to the SALT deduction cap accounts for nearly one-fourth of the U.S. historical norm.

Figure 4. The home price impact of SALT deduction cap by home price tier and county cost

Pre- and post-TCJA difference in average annual home price growth rate for high-SALT counties relative to low-SALT counties, %



Source: The Author's regression analyses using data from Black Knight, IRS, BEA, BLS, Census and FHFA.

This implies that, the new SALT deduction cap may have created an incentive that changed the dynamics of mobility by shifting housing demand from the high-SALT areas to the areas where the SALT deduction amount was on average below $10,000 as recorded in 2017. Rational homeowners in the TCJA era would be more likely to consider relocating to the low-SALT geographies in order to mitigate the loss of full SALT deduction benefits received before, and the informed new homebuyers would also be more likely to search in the low-SALT counties for home purchases.

B. The Hardest Hit Homes and Counties by the SALT Deduction Cap

Next, we look at the varying impacts of the SALT deduction cap across all counties segmented by their housing cost levels and all homes segmented by their price tiers (Tables 2-3). The adverse house price effect of the new SALT deduction cap is more pronounced for homes of high-SALT counties that are also the high-cost counties than those that are the low-cost counties, where the average home sales price in a high-cost county (or low-cost county) was above (or below) the national average as recorded in 2017 -- the year before the TCJA took effect. As also illustrated in the Figure 4 above, relative to low-SALT counties, average annual home price growth rate in high-SALT counties under the TCJA was reduced by 0.82 percentage points for high-cost counties. In contrast, that impact was only a 0.34 percent point reduction on average annual home price growth rate for low-cost counties. Among all types of homes and counties, the strongest negative impact of the SALT deduction cap occurred on the most expensive homes (in the top 20%) in the high-SALT and high-cost counties. The pre- and post-TCJA difference in average annual home price growth rates in high-SALT counties was reduced by 0.95 percentage points for expensive homes in high-cost areas. The findings imply that, by reducing tax deduction benefits substantially, the new SALT deduction limit increased the user cost of capital for owning homes in the high-SALT and high-cost areas, especially for owning high-priced homes, which consequently led to a reduced demand on expensive homes and a shift in housing demand from areas with high housing cost levels to areas with low housing costs. This implies that rational homeowners in the TCJA era would be more likely to choose downsizing their expensive homes or moving away from high-cost and high-SALT counties, so as to minimize the increased homeownership costs (taxes) under the TCJA.

Table 5 lists the top 100 high- and low-SALT counties ranked by their county averages of the SALT deduction amount filed in 2017. The top 50 high-SALT counties or those with the highest average SALT deduction amount are concentrated mostly in the northeastern and western coastal

states, including California, New York, New Jersey, Massachusetts, Minnesota, Maryland, District of Columbia, and Virginia. The top 50 low-SALT counties or those with the lowest average SALT deduction amount are concentrated mostly in the southern and Plains states, including Tennessee, Florida, Texas, Alabama, Wyoming, Louisiana, and Nevada, most of which do not levy state taxes on income or earned wages. In fact, there are anecdotal reports that, since the TCJA became effective in 2018, an unusually high number of people from high-tax and high-cost areas such as New York and California have flocked into buying homes in areas, such as Florida and Texas where homes have similar or even improved amenities but are priced much more modestly, and more importantly, the SALT is substantially lower.

C. Decomposing the SALT Cap's Impact: Which Tax Type Has the Strongest Effect?

State and local taxes contain four components: state and local income tax, real estate tax, general sales tax and personal property tax. As shown in Figure 5, their county average deduction amounts accounted for 2.53, 1.54, 0.16 and 0.11 percent of the county average Adjusted Gross Income (AGI) filed in 2017, respectively. Thus, economically, state and local income taxes are the most important tax type among the SALT components. Real estate tax is also an important tax type. However, sales tax and personal property tax are trivial.

Statistically, the regression results from Model 2 (Table 4) do indicate that, among all state and local tax types, state and local income taxes have the strongest negative impact on home prices across all counties as segmented by home price tiers. As illustrated in Figure 6, in response to a one percentage point increase in the state and local income tax deductions (as a percent of adjusted gross income) at county level in 2017, average annual house price growth rates decreased by 0.45, 0.42 and 0.53 percentage points in the post-TCJA era for all homes, the least expensive homes and the most expensive homes, respectively. To a lesser extent, state and local real estate tax is also verified to be a statistically significant tax type. One percentage point increase in real estate tax deductions claimed in 2017 was associated with 0.28, 0.20, and 0.29 percentage point decrease on the annual home price growth rate when the SALT deduction cap was in effect, for all homes, the least expensive homes and the most expensive homes, respectively.

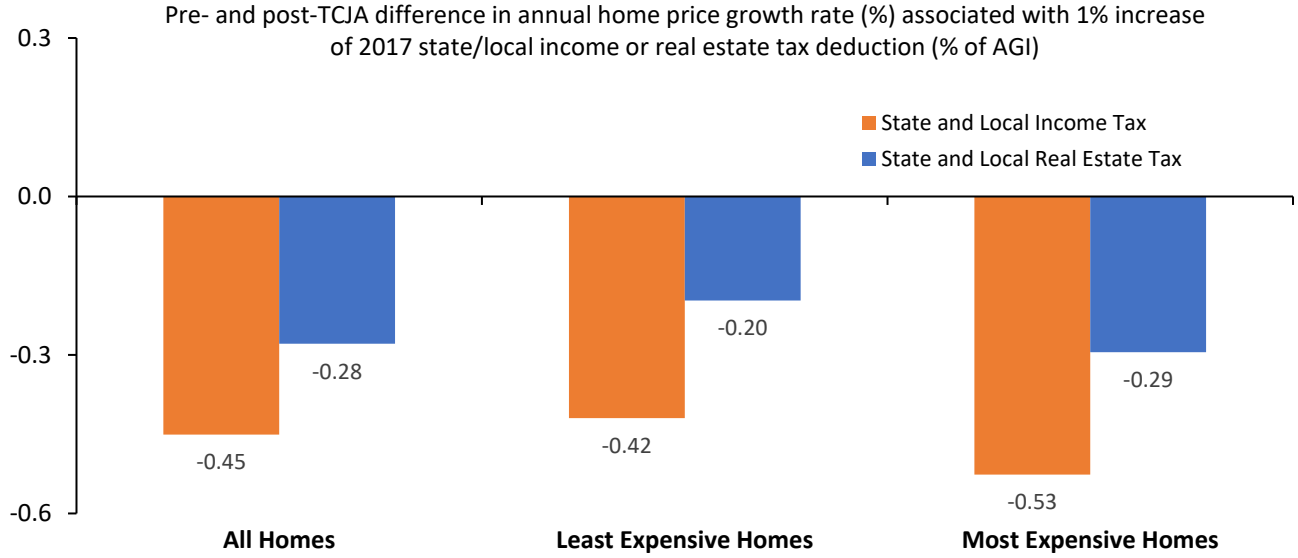
These findings have important implications for mobility and housing choices. To minimize the tax liability beyond the new SALT cap of $10,000, the first strategy for taxpayers would be moving

away from the jurisdictions with high state and local income tax rate and relocating to those with no state and local income tax such as Florida and Texas, in order to reduce the crowding effect of state

Figure 5. County average on state and local tax deductions claimed in 2017 by tax type
Claimed tax deduction amount to Adjusted Gross Income (AGI) ratio, %

Source: Calculated from the 2017 IRS Individual Tax Return database

Figure 6. The impact of TCJA on home prices by state/local tax type and home price tier
Pre- and post-TCJA difference in annual home price growth rate (%) associated with 1% increase of 2017 state/local income or real estate tax deduction (% of AGI)



Source: The author's regression analyses using data from Black Knight, IRS, BEA, BLS, Census and FHFA.

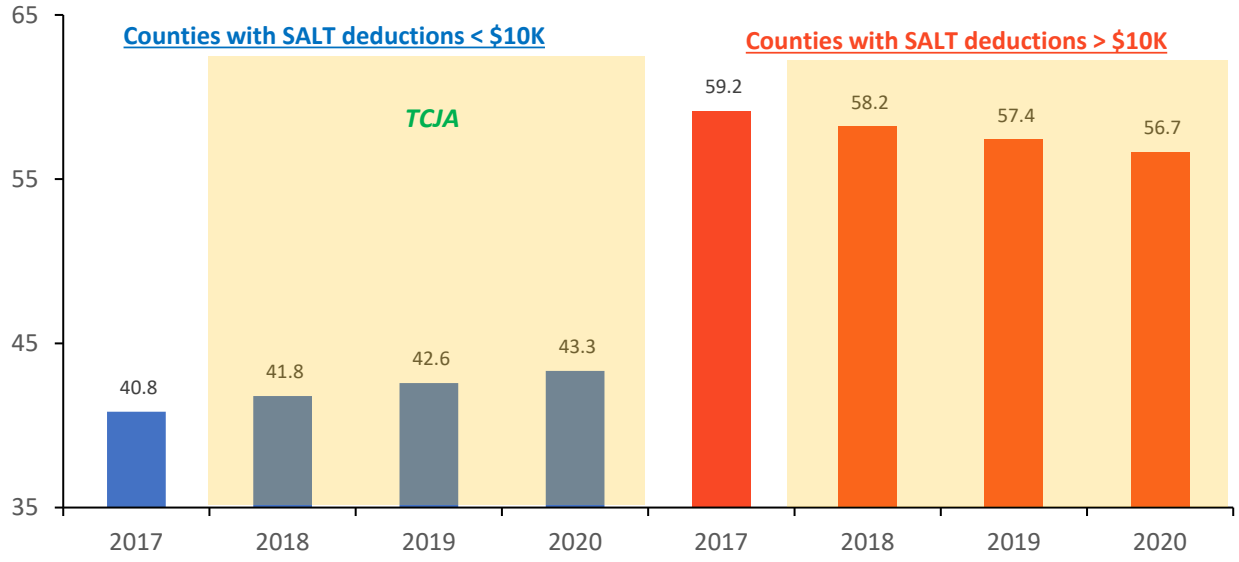
and local income tax payments on real estate tax and other deductible SALT payments. Another loss-mitigation strategy for taxpayers would be either downsizing or moving away from the jurisdictions (such as New Jersey) with high real estate tax rate, so as to minimize the real estate tax payments in exchange for maximizing the deductions of state and local income tax payments allowable under the $10,000 SALT deduction cap.

VI. Implications for Mortgage Finance

The housing market risks are contagious to mortgage markets because the SALT deduction cap's adverse effect on home prices in the high-SALT areas could reduce the overall demand for home-purchase mortgages in these areas. It could also lead to a shrinking demand for new jumbo mortgages that are used to finance the purchases of expensive homes.

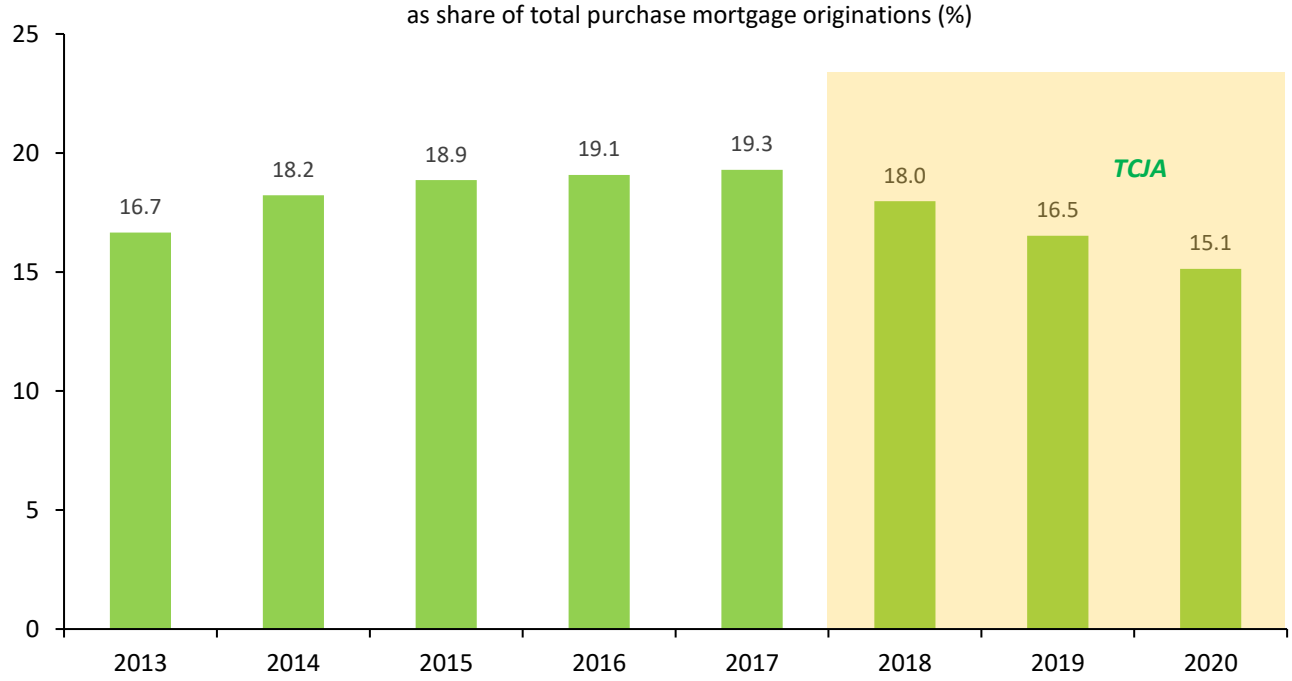
Consistent with the findings on home prices above, a descriptive analysis based on data from first-lien mortgages for 1-4 family, owner-occupied and site-built homes (Figure 7) shows that, while home-purchase mortgage originations in the high-SALT counties accounted for 59.2 percent of total purchase mortgage originations in the U.S. in 2017, their share dropped by one percentage point to 58.2 percent in 2018 (the 1st year under the SALT deduction cap), 57.4 percent in 2019 (the 2nd year under the SALT cap), and further to only 56.7 percent in 2020 (the 3rd year under the SALT cap). Moreover, as shown in Figure 8, while home-purchase jumbo mortgage originations in the U.S. accounted for 19.3 percent of total purchase loan originations in 2017, their share dropped to 18 percent in 2018, 16.5 percent in 2019, and only 15.1 percent in 2020. These reductions in the market shares of purchase mortgage originations in the high-SALT areas and jumbo mortgage originations imply that the adverse effects of the SALT deduction cap on home prices in the high-SALT counties and expensive homes as found in this study may have repercussions on mortgage finance, especially for financial institutions with a focus of mortgage business on high-tax high-cost areas or jumbo loans.

Figure 7. Home-purchase mortgage originations by SALT deductions in the U.S.
as share of total purchase mortgage originations (%)



Source: Calculated from Home Mortgage Disclosure Act (HMDA) data released by FFIEC and 2017 IRS Individual Tax Return databases

Figure 8. Home-purchase jumbo mortgage originations
as share of total purchase mortgage originations (%)



Source: Calculated from Home Mortgage Disclosure Act (HMDA) data released by FFIEC and 2017 IRS Individual Tax Return databases

VII. Conclusions

The *Tax Cuts and Jobs Act of 2017* (TCJA) changed the federal tax treatment of state and local tax deductions that had underpinned homeownership subsidization policies and state and local government finance for over 100 years. Effective since January 2018, the combined SALT deductions are limited by a new cap of $10,000. After controlling for the effects of housing market fundamentals, alternative impacts from historical events and policy interventions across 945 counties and over time, the new SALT deduction cap of $10,000 is verified to have statistically significant negative impact on home prices in high-SALT counties (where the county average SALT deduction amount was greater than $10,000 as recorded by the IRS in 2007). Overall, the SALT deduction cap reduced average annual home price growth rate by 0.79 percentage points in high-SALT counties, relative to low-SALT counties, representing a reduction of almost one-fourth of the U.S. historical nominal home price growth rate per year.

When segmented by housing costs for counties, home prices of high-SALT counties in the high-cost areas sustained substantially more negative impact than those in the low-cost areas. When segmented by home price tiers, the hardest hit were the expensive homes in the high-SALT and high-

cost counties, as their annual price growth rate was reduced by 0.95 percentage points by the SALT deduction cap. The top 50 high-SALT counties are concentrated in the northeastern and western coastal states, while the top 50 low-SALT counties are mostly in the southern states that do not levy state taxes on income or earned wages. When the SALT is decomposed, the findings further indicate that, among all state and local tax types (income or sales tax, real estate tax, and personal property tax), state and local income tax had the strongest adverse effect on home price movements, both economically and statistically, with the SALT deduction cap in place. Real estate tax also had a significant home price impact.

The $10,000 cap set by the TCJA on the deductibility of the SALT payments is scheduled to expire on December 31, 2025. However, home price risks created by the SALT deduction cap for expensive homes and for homes in high-SALT and high-cost areas could be either prolonged or temporary, depending upon the future policy debate and legislative action to extend, repeal or allow SALT cap to expire as scheduled after 2025. As long as the SALT deduction cap is in place, however, it affects housing market dynamics by steering households away from high-tax, high-cost areas and from expensive homes. In turn, a descriptive analysis suggests that the SALT cap-induced home price risk may have ramifications in mortgage markets. As measured by the market share of originations, home-purchase mortgages in high-SALT areas were reduced rapidly and continuously after the SALT deduction cap took effect in 2018. The jumbo mortgages used to finance the purchases of expensive homes also shrunk substantially across the country when the SALT deductions were capped under the TCJA.

This paper is one of the first empirical studies that evaluates the actual impact of the SALT deduction cap on home price movement across various housing market segments in the U.S. on the basis of a very large national sample panel data set. Its empirical findings not only make important contributions to the literature but also improve our understanding of the real-world ramifications of the 2017 tax law reform (TCJA) in residential real estate markets. Based on the county data collected for Jan. 2015 through Oct. 2019, Li and Yu (2020) found that capping the federal tax deduction of state and local taxes at $10,000 has caused the growth rate of home value to decline by an annualized 0.9 percentage point, or 18 percent, in areas with high real estate tax burden, a key finding that is consistent with and largely confirmed by this study. Moreover, this paper also makes additional contributions. It segments the impacted housing markets through county cost levels and home price tiers, thereby identifying the expensive homes in high-SALT high-cost areas as the hardest hit housing segment in the TCJA era. By decomposing the SALT components, this paper has identified state and

local income tax, rather than real estate tax as assumed by Li and Yu (2020), as the most important tax type affecting home prices as a result of crowding out effect with the SALT cap in place. Furthermore, this study focuses on assessing the SALT cap's impact in its first three years (2018-2020) of implementation, the longest time span among the existing studies on the subject. It also contributes to a growing literature on applying advanced policy analytics, such as the difference-in-difference estimation approach, into housing and tax policy research.

While this study draws out important implications for mortgage finance and mobility based on the observed and estimated impacts of the SALT deduction cap on home prices, robust studies that directly analyze the impact of the SALT deduction cap on mortgage market dynamics and mobility patterns are warranted in the future.

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Table 1. Results from Model I and Sensitivity Analysis: All Counties by Home Price Tiers

	Dependent Variable: Annual Price Growth Rate for All Counties								
	All Homes			Least Expensive Homes			Most Expensive Homes		
Explanatory Variables	**Parameter Estimate**	**Standard Error**	**Pr > |t|**	**Parameter Estimate**	**Standard Error**	**Pr > |t|**	**Parameter Estimate**	**Standard Error**	**Pr > |t|**
Intercept	-2.9849	0.8456	0.0004	-3.4399	1.1141	0.0020	-4.7773	0.7787	<.0001
Lagged Home Price Growth Rate	0.4127	0.0094	<.0001	0.4514	0.0091	<.0001	0.4045	0.0099	<.0001
Lagged Employment Growth Rate	0.1280	0.0166	<.0001	0.1476	0.0219	<.0001	0.0775	0.0152	<.0001
Lagged Population Growth Rate	0.2872	0.0373	<.0001	0.3922	0.0490	<.0001	0.1607	0.0342	<.0001
Lagged Personal Income Growth Rate	0.0809	0.0095	<.0001	0.0839	0.0125	<.0001	0.0760	0.0088	<.0001
County Size (Lagged Population in 100,000)	0.0103	0.0049	0.0372	0.0290	0.0065	<.0001	-0.0077	0.0045	0.0902
30-year Fixed Mortgage Rates	0.9015	0.1161	<.0001	0.7878	0.1530	<.0001	1.4533	0.1069	<.0001
Lagged Land Value ($100,000 per acre)	-0.0097	0.0035	0.0053	-0.0144	0.0046	0.0017	-0.0001	0.0032	0.9771
Single-family building permit per 100,000 people in prior year	-0.1200	0.0120	<.0001	-0.1650	0.0158	<.0001	-0.0663	0.0110	<.0001
Location fixed effect (50 state dummies)	-0.77 to 2.96	0.70 to 0.99	.<0001 to 0.99	-0.89 to 3.87	0.93 to 1.31	0.0001 to 0.89	-0.99 to 1.99	0.65 to 0.92	0.003 to 0.98
SALT Cap Dummy (1 if Avg SALT Deduction > $10k in 2017)	0.1291	0.0764	0.0911	0.2719	0.1008	0.0070	0.1640	0.0704	0.0198
Home Mortgage Interest Deduction (as % of county AGI in 2017)	0.3976	0.0519	<.0001	0.7824	0.0685	<.0001	0.2166	0.0478	<.0001
TCJA Intervention Dummy (1 if year = 2018-2020)	1.2911	0.1665	<.0001	2.2102	0.2198	<.0001	0.0117	0.1514	0.9387
Covid-19 Pandemic Dummy (1 if year = 2020)	3.4509	0.1649	<.0001	3.2477	0.2173	<.0001	4.0440	0.1519	<.0001
Interaction Term of SALT Deduction Cap with TCJA Dummy	-0.7916	0.1165	<.0001	-0.8054	0.1536	<.0001	-0.7487	0.1073	<.0001
Interaction Term of SALT Cap with Covid-19 Pandemic Dummy	0.5809	0.1649	0.0004	0.6338	0.2171	0.0035	0.4214	0.1517	0.0055
Interaction Term of Mortgage Interest Deduction with TCJA Dummy	-0.4871	0.0609	<.0001	-0.8348	0.0802	<.0001	-0.1147	0.0559	0.0401
Number of Observations	7516			7516			7516		
Adjusted R-Squared	0.5806			0.593			0.5104		

Table 2. Results from Model I and Sensitivity Analysis: High-Cost Counties by Home Price Tiers

	Dependent Variable: Annual Price Growth Rate for High-Cost Counties								
	All Homes			Least Expensive Homes			Most Expensive Homes		
Explanatory Variables	**Parameter Estimate**	**Standard Error**	**Pr > |t|**	**Parameter Estimate**	**Standard Error**	**Pr > |t|**	**Parameter Estimate**	**Standard Error**	**Pr > |t|**
Intercept	-4.8191	1.1579	<.0001	-5.6038	1.5533	0.0003	-6.1846	1.0570	<.0001
Lagged Home Price Growth Rate	0.3264	0.0155	<.0001	0.3843	0.0147	<.0001	0.3481	0.0163	<.0001
Lagged Employment Growth Rate	0.0803	0.0296	0.0068	0.0812	0.0397	0.0407	0.0352	0.0269	0.1904
Lagged Population Growth Rate	0.2730	0.0609	<.0001	0.3884	0.0816	<.0001	0.1526	0.0554	0.0059
Lagged Personal Income Growth Rate	0.1152	0.0159	<.0001	0.1352	0.0213	<.0001	0.0941	0.0144	<.0001
County Size (Lagged Population in 100,000)	0.0066	0.0064	0.3085	0.0164	0.0087	0.0589	-0.0062	0.0059	0.2944
30-year Fixed Mortgage Rates	1.7007	0.2093	<.0001	1.6774	0.2809	<.0001	2.1256	0.1909	<.0001
Lagged Land Value ($100,000 per acre)	-0.0098	0.0040	0.0153	-0.0155	0.0054	0.0044	-0.0031	0.0037	0.4016
Single-family building permit per 100,000 people in prior year	-0.1224	0.0183	<.0001	-0.1773	0.0245	<.0001	-0.0520	0.0166	0.0018
Location fixed effect (50 state dummies)	-1.11 to 3.47	0.78 to 1.09	<.0001 to 0.98	-0.93 to 4.08	1.05 to 1.46	0.0001 to 0.87	-1.68 to 2.67	0.77 to 0.99	0.0005 to 0.99
SALT Cap Dummy (1 if Avg SALT Deduction > $10k in 2017)	0.0846	0.1364	0.5350	0.2007	0.1831	0.2730	0.1836	0.1245	0.1402
Home Mortgage Interest Deduction (as % of county AGI in 2017)	0.0809	0.0867	0.3504	0.4712	0.1163	<.0001	-0.1611	0.0795	0.0427
TCJA Intervention Dummy (1 if year = 2018-2020)	-0.3010	0.3225	0.3507	0.3363	0.4334	0.4378	-1.0345	0.2928	0.0004
Covid-19 Pandemic Dummy (1 if year = 2020)	4.3740	0.3214	<.0001	4.1983	0.4312	<.0001	5.1058	0.2931	<.0001
Interaction Term of SALT Deduction Cap with TCJA Dummy	-0.8198	0.1965	<.0001	-0.7320	0.2637	0.0055	-0.9493	0.1795	<.0001
Interaction Term of SALT Cap with Covid-19 Pandemic Dummy	0.6061	0.2812	0.0313	0.6183	0.3772	0.1012	0.4406	0.2565	0.0859
Interaction Term of Mortgage Interest Deduction with TCJA Dummy	-0.1969	0.0986	0.0460	-0.5226	0.1325	<.0001	0.0741	0.0898	0.4094
Number of Observations	2796			2796			2796		
Adjusted R-Squared	0.4944			0.514			0.4764		

Table 3. Results from Model I and Sensitivity Analysis: Low-Cost Counties by Home Price Tiers

	Dependent Variable: Annual Price Growth Rate for Low-Cost Counties								
	All Homes			Least Expensive Homes			Most Expensive Homes		
Explanatory Variables	**Parameter Estimate**	**Standard Error**	**Pr > |t|**	**Parameter Estimate**	**Standard Error**	**Pr > |t|**	**Parameter Estimate**	**Standard Error**	**Pr > |t|**
Intercept	-1.8202	0.8405	0.0304	-1.8498	1.0936	0.0908	-3.8764	0.7819	<.0001
Lagged Home Price Growth Rate	0.4444	0.0121	<.0001	0.4752	0.0118	<.0001	0.4004	0.0127	<.0001
Lagged Employment Growth Rate	0.1695	0.0195	<.0001	0.2006	0.0253	<.0001	0.1086	0.0181	<.0001
Lagged Population Growth Rate	0.2415	0.0480	<.0001	0.3171	0.0624	<.0001	0.1524	0.0444	0.0006
Lagged Personal Income Growth Rate	0.0545	0.0118	<.0001	0.0401	0.0153	0.0089	0.0629	0.0110	<.0001
County Size (Lagged Population in 100,000)	0.0306	0.0106	0.0038	0.0621	0.0138	<.0001	-0.0066	0.0098	0.5014
30-year Fixed Mortgage Rates	0.4775	0.1340	0.0004	0.3002	0.1744	0.0853	1.0652	0.1246	<.0001
Lagged Land Value ($100,000 per acre)	-0.1168	0.0501	0.0197	-0.1287	0.0652	0.0483	-0.0479	0.0465	0.3030
Single-family building permit per 100,000 people in prior year	-0.1254	0.0170	<.0001	-0.1742	0.0221	<.0001	-0.0836	0.0158	<.0001
Location fixed effect (50 state dummies)	-0.49 to 5.13	0.65 to 0.91	<.0001 to 0.97	-0.37 to 6.23	0.84 to 1.18	<.0001 to 0.71	-0.83 to 3.37	0.60 to 0.84	0.001 to 0.98
SALT Cap Dummy (1 if Avg SALT Deduction > $10k in 2017)	0.0219	0.1004	0.8270	0.0444	0.1308	0.7340	0.0518	0.0934	0.5793
Home Mortgage Interest Deduction (as % of county AGI in 2017)	0.4458	0.0721	<.0001	0.7482	0.0939	<.0001	0.3693	0.0670	<.0001
TCJA Intervention Dummy (1 if year = 2018-2020)	0.9709	0.2197	<.0001	1.5772	0.2861	<.0001	-0.0272	0.2031	0.8935
Covid-19 Pandemic Dummy (1 if year = 2020)	2.9362	0.1845	<.0001	2.6859	0.2401	<.0001	3.4892	0.1716	<.0001
Interaction Term of SALT Deduction Cap with TCJA Dummy	-0.3441	0.1476	0.0197	-0.3345	0.1921	0.0817	-0.2921	0.1373	0.0334
Interaction Term of SALT Cap with Covid-19 Pandemic Dummy	0.3262	0.2146	0.1285	0.5475	0.2793	0.0500	-0.0412	0.1996	0.8366
Interaction Term of Mortgage Interest Deduction with TCJA Dummy	-0.1947	0.0910	0.0325	-0.3511	0.1185	0.0031	0.0308	0.0847	0.7164
Number of Observations	4720			4720			4720		
Adjusted R-Squared	0.6232			0.6277			0.5087		

Table 4. Results from Model II and Sensitivity Analysis: All Counties by Home Price Tiers

	Dependent Variable: Annual Price Growth Rate for model II data by Home Price Tiers								
	All Homes			Least Expensive Homes			Most Expensive Homes		
Explanatory Variables	**Parameter Estimate**	**Standard Error**	**Pr > |t|**	**Parameter Estimate**	**Standard Error**	**Pr > |t|**	**Parameter Estimate**	**Standard Error**	**Pr > |t|**
Intercept	-3.1296	0.8448	0.0002	-3.8465	1.1135	0.0006	-4.8550	0.7769	<.0001
Lagged Home Price Growth Rate	0.4107	0.0094	<.0001	0.4474	0.0091	<.0001	0.4014	0.0099	<.0001
Lagged Employment Growth Rate	0.1378	0.0165	<.0001	0.1667	0.0218	<.0001	0.0795	0.0152	<.0001
Lagged Population Growth Rate	0.2852	0.0370	<.0001	0.3853	0.0487	<.0001	0.1603	0.0338	<.0001
Lagged Personal Income Growth Rate	0.0780	0.0095	<.0001	0.0793	0.0125	<.0001	0.0728	0.0087	<.0001
County Size (Lagged Population in 100,000)	0.0131	0.0050	0.0085	0.0315	0.0066	<.0001	-0.0039	0.0046	0.3913
30-year Fixed Mortgage Rates	0.8982	0.1151	<.0001	0.7821	0.1517	<.0001	1.4462	0.1058	<.0001
Lagged Land Value ($100,000 per acre)	-0.0075	0.0040	0.0636	-0.0143	0.0053	0.0073	0.0009	0.0037	0.8076
Single-family building permit per 100,000 people in prior year	-0.1185	0.0120	<.0001	-0.1578	0.0159	<.0001	-0.0684	0.0110	<.0001
Location fixed effect (50 state dummies)	-1.06 to 2.59	0.70 to 0.99	0.007 to 0.99	-1.03 to 3.77	0.92 to 1.31	0.004 to 1.96	-1.29 to 1.82	0.65 to 0.91	0.01 to 0.90
State and Local Income Taxes Deduction (% of AGI)	0.1140	0.0549	0.0378	0.1705	0.0724	0.0185	0.1547	0.0505	0.0022
State and Local General Sales Tax Deduction (% of AGI)	1.8043	0.4805	0.0002	2.3221	0.6335	0.0002	1.4485	0.4418	0.0010
State and Local Real Estate Tax Deduction (% of AGI)	-0.0879	0.0760	0.2478	0.0030	0.1002	0.9760	-0.1411	0.0699	0.0436
State and Local Personal Property Tax Deduction (% of AGI)	-1.1431	0.9365	0.2223	-1.8080	1.2349	0.1432	-3.0197	0.8615	0.0005
Home Mortgage Interest Deduction (as % of AGI)	0.3984	0.0716	<.0001	0.7407	0.0946	<.0001	0.2612	0.0658	<.0001
TCJA Intervention Dummy (1 if year = 2018 - 2020)	2.6910	0.2162	<.0001	3.6740	0.2854	<.0001	1.4027	0.1977	<.0001
Covid-19 Pandemic Dummy (1 if year = 2020)	2.6889	0.3225	<.0001	2.9386	0.4249	<.0001	2.7994	0.2963	<.0001
Interaction Term of State/Local Income Tax Deduction with TCJA Dummy	-0.4507	0.0634	<.0001	-0.4195	0.0836	<.0001	-0.5263	0.0583	<.0001
Interaction Term of State/Local Sales Tax Deduction with TCJA Dummy	-3.3217	0.3585	<.0001	-3.9686	0.4727	<.0001	-3.0104	0.3296	<.0001
Interaction Term of State/Local Real Estate Tax Deduction with TCJA Dummy	-0.2787	0.0729	0.0001	-0.1970	0.0961	0.0404	-0.2948	0.0670	<.0001
Interaction Term of State/Local Personal Property Tax Deduction with TCJA Dummy	-0.8189	0.7513	0.2758	-0.1114	0.9905	0.9104	-1.2161	0.6908	0.0784
Interaction Term of State/Local Income Tax Deduction with Covid Dummy	0.0681	0.0827	0.4106	0.0267	0.1089	0.8064	0.0504	0.0760	0.5070
Interaction Term of State/Local Sales Tax Deduction with Covid Dummy	-0.4166	0.4969	0.4018	-1.3104	0.6547	0.0454	0.5269	0.4566	0.2485
Interaction Term of State/Local Real Estate Tax Deduction with Covid Dummy	0.4460	0.1050	<.0001	0.3592	0.1385	0.0095	0.5516	0.0966	<.0001
Interaction Term of State/Local Personal Property Tax Deduction with Covid Dummy	1.3832	1.0492	0.1874	0.9657	1.3835	0.4852	2.6948	0.9645	0.0052
Interaction Term of Mortgage Interest Deduction with TCJA Dummy	-0.2558	0.0765	0.0008	-0.6966	0.1010	<.0001	0.2097	0.0703	0.0029
Number of Observations	7516			7516			7516		
Adjusted R-Squared	0.5882			0.6001			0.5206		

Table 5. Top 100 Counties or County Equivalents Ranked by SALT Deduction Amount

	The Highest 50 Counties				The Lowest 50 Counties			
			State and Local Tax (SALT) Deduction in 2017				State and Local Tax (SALT) Deduction in 2017	
Rank	County Name	State	Average Amount ($1,000)	As % of AGI	County Name	State	Average Amount ($1,000)	As % of AGI
1	Marin County	CA	42.8	12.1	Orange County	TX	3.5	1.9
2	San Mateo County	CA	42.1	11.2	Highlands County	FL	3.5	1.5
3	Santa Clara County	CA	37.2	10.4	McMinn County	TN	3.6	1.0
4	Westchester County	NY	36.0	11.1	Osceola County	FL	4.0	2.1
5	San Francisco County	CA	35.9	10.2	Talladega County	AL	4.0	2.0
6	Fairfield County	CT	35.4	9.8	Polk County	FL	4.0	1.5
7	Nassau County	NY	26.1	11.6	Greene County	TN	4.1	1.2
8	Bergen County	NJ	25.8	10.3	Maury County	TN	4.1	1.4
9	Morris County	NJ	25.6	10.2	Hamblen County	TN	4.2	1.1
10	Somerset County	NJ	24.7	10.0	St. John the Baptist	LA	4.2	2.3
11	Essex County	NJ	24.3	9.7	Fremont County	WY	4.2	1.4
12	Contra Costa County	CA	24.2	10.0	Robertson County	TN	4.2	1.5
13	Napa County	CA	24.2	9.3	Rutherford County	TN	4.2	1.6
14	Summit County	UT	23.1	6.9	Cheatham County	TN	4.2	1.4
15	Rockland County	NY	22.1	11.1	Sevier County	TN	4.3	1.3
16	Norfolk County	MA	22.0	7.2	Cumberland County	TN	4.3	1.5
17	Orange County	CA	21.9	9.2	Hernando County	FL	4.3	1.5
18	Hunterdon County	NJ	21.8	10.0	Clayton County	GA	4.3	3.3
19	Alameda County	CA	21.5	8.7	Sweetwater County	WY	4.4	1.4
20	Monmouth County	NJ	21.2	9.8	Tipton County	TN	4.4	1.7
21	Union County	NJ	21.1	9.7	Madison County	TN	4.4	1.5
22	Santa Barbara County	CA	21.1	8.6	Calhoun County	AL	4.4	2.0
23	Mercer County	NJ	21.0	9.1	Campbell County	TN	4.5	1.0
24	Suffolk County	MA	20.7	5.4	Fayette County	TN	4.5	1.8
25	Los Angeles County	CA	20.5	8.9	St. Bernard Parish	LA	4.5	1.9
26	Santa Cruz County	CA	20.1	8.4	Lyon County	NV	4.5	2.0
27	Middlesex County	MA	19.9	7.1	Autauga County	AL	4.5	2.1
28	Lake County	IL	19.9	7.9	Jefferson County	TX	4.5	2.3
29	Suffolk County	NY	19.9	10.4	Laramie County	WY	4.5	1.7
30	Bristol County	RI	19.5	8.2	Bradley County	TN	4.6	1.5
31	Hennepin County	MN	19.2	8.0	Albany County	WY	4.6	1.5
32	Montgomery County	MD	19.1	9.0	Montgomery County	TN	4.6	1.5
33	Saratoga County	NY	18.9	7.5	Natrona County	WY	4.6	1.5
34	Putnam County	NY	18.9	10.5	Matanuska-Susitna Bo	AK	4.6	1.8
35	Howard County	MD	18.3	9.4	Hidalgo County	TX	4.6	2.3
36	Fulton County	GA	17.8	6.3	Elko County	NV	4.6	1.5
37	Arlington County	VA	17.8	6.4	Tangipahoa Parish	LA	4.6	2.2
38	District of Columbia	DC	17.6	7.3	Jefferson County	TN	4.7	1.4
39	San Diego County	CA	17.4	7.8	Hardin County	TX	4.7	2.1
40	Ozaukee County	WI	17.3	7.3	Elmore County	AL	4.7	2.3
41	Ventura County	CA	17.2	8.1	Blount County	AL	4.7	2.1
42	Sonoma County	CA	17.1	8.1	Wilson County	TN	4.7	1.8
43	Carver County	MN	17.0	8.1	Escambia County	FL	4.8	1.5
44	Kings County	NY	16.9	8.2	Clay County	FL	4.8	2.0
45	Albany County	NY	16.9	7.4	Monroe County	TN	4.8	1.3
46	Benton County	AR	16.7	4.0	San Patricio County	TX	4.8	2.3
47	Columbia County	NY	16.5	7.7	Harrison County	TX	4.8	1.9
48	Placer County	CA	16.5	8.5	Bay County	FL	4.8	1.6
49	Monterey County	CA	16.4	6.9	Citrus County	FL	4.9	1.8
50	El Dorado County	CA	16.3	8.1	Lake County	FL	4.9	2.1

Source: Calculated from 2017 IRS Individual Tax Return database for counties and county equivalents