Do house prices affect campaign contributions?

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Abstract

Individual campaign contributions are the largest source of financing for U.S. presidential and congressional candidates, though the body of research examining why people give remains small. To help understand these decisions, we estimate the causal impact of house prices on donations across campaigns and parties using an instrumental variables strategy. Our results indicate that an increase in house prices increases ZIP code-level donations to Democratic presidential and congressional candidates, with minuscule or no effect for Republican candidates. The effects in areas with a greater proportion of renters are larger than areas with more homeowners. Since this population is likely to experience higher rents as a result of house price increases, this suggests that pleas for policy may inspire giving. Further, areas with the highest fraction of college educated residents also see the largest effects, when compared to less-educated areas, suggesting a wealth effect exists as well.

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1 Introduction

The 2016 presidential campaigns generated $1.46 billion in contributions, with 74% coming from individual donors (Center for Responsive Politics 2016); in the 2016 elections for the U.S. House of Representatives and Senate, these small-dollar individual donors contributed 61% of the $1.7 billion dollars in total contributions (Center for Responsive Politics 2016). This statistic is not unique to the 2016 election (Bouton, Castanheira and Drazen 2018). The frequency of giving to campaigns leads to a question as to why people choose to donate money to political candidates, or even vote, given that both the extra dollar or the extra vote are unlikely to be marginal for the outcome of the election. While donations undoubtedly help to fuel campaigns, little research exists to understand what affects individual-level giving.[1] At the same time, the early 2000s saw a housing boom and subsequent bust that created volatility in house prices, which previously had more consistent growth over time. This paper asks a new question: how do the fluctuations in house prices over the last three decades affect individual-level campaign donations across offices and parties?

Studying the effect of house prices on campaign donations is challenging. Though house prices fluctuate regularly and are unlikely to be influenced by campaign donations, house price swings are correlated with many other economic conditions that could generate omitted variable bias; this omitted variable bias could either over- or under-state the true effect, making it difficult to pin down the causal effect of house prices on campaign contributions.

We overcome this challenge by using an instrumental variable (IV) strategy that relies on the supply elasticities of cities constructed by Saiz (2010) and national fluctuations in house prices. In areas with relatively more inelastic supply, national house price increases local house prices by relatively more than in areas with relatively more elastic supply. Our identifying assumption requires that swings in the interaction between national prices and supply elasticities are correlated with total or party-specific campaign donations in a given election cycle only through local price changes. This IV strategy allows us to estimate the causal effect of house prices on individual campaign contributions.[2]

To estimate the effect of house prices on contributions, we extract ZIP code level data on presidential and congressional campaign contributions from the Federal Election Commission (FEC) from 1992-2016, which was made publicly available by Center for Responsive Politics (2016). We then merge these data with ZIP code level house price indexes over the same period from the Federal Housing Finance Agency (FHFA). We instrument for house prices using the Saiz (2010) elasticity of supply measures—supply restrictions that capture both natural barriers and regulatory environments—interacted with national fluctuations in house prices. In order to separate out heterogenous effects of house prices on donations, we interact our instrumented prices with ZIP code-level homeownership rates from 1990. ZIP code-level contributions in areas with more renters may respond differently than in areas with more

[1] Some exceptions are Niebler and Urban (2017), Urban and Niebler (2014), Fremeth, Richter and Schaufele (2013), and Petrova, Sen and Yildirim (2017) though none focus on economic factors of giving. Brady, Verba and Schlozman's (1995) work argues that "the major determinant of giving money is having money" (283), but they do not estimate causal effects.

[2] A similar IV strategy has been used to estimate the effect of house prices on fertility (Dettling and Kearney 2014) and portfolio choice (Chetty, Sandor and Szeidl 2017).

owners, as higher prices may reflect a lower relative income for renters and a relatively greater income for owners. We study the effects on total contributions as well as contributions to each party and for each office, looking at elections for President, House of Representatives, and Senate. Further, we use voter turnout and vote choice data to understand how political participation and preference change due to house price changes.

Our research fits into three different strands of the literature. First, we explore the reasons why people choose to donate to campaigns. A significant amount of the empirical and theoretical political economy literature has studied political action committee (PAC) giving,[3] but there is less evidence regarding why individuals give to political campaigns. Literature that does focus on this question often takes as its starting point the fact that individuals must have money in order to donate money (Brady, Verba and Schlozman 1995). Additional research examines contribution habits of wealthy Americans (Lomax Cook, Page and Moskowitz 2014) and how "the donor class" affects campaigns and participates in elections (Overton 2004). Other factors that affect whether individuals donate money to political campaigns are: campaign advertising (Urban and Niebler 2014; Niebler and Urban 2017; Collins 2011), the transition to becoming a CEO (Fremeth, Richter and Schaufele 2013), and campaign use of social media (Petrova, Sen and Yildirim 2017). Magleby, Goodliffe and Olsen (2018) find that characteristics of the candidates themselves plays a significant role in whether people give small-dollar donations. In related work, Bonica and Rosenthal (2015) explore the effects of within individual changes in wealth on campaign contributions among an exorbitantly wealthy sample: the Forbes 400 wealthiest Americans. They find that the wealth elasticity of contributions is positive and less than one for both Democrats and Republicans, though the elasticity is larger for Republican giving. This paper is the first to look at how house prices affect campaign donations.

Second, this paper ties into the traditional charitable giving literature. Understanding the ways in which house prices affect campaign contributions may better inform how fluctuations in economic conditions affect charitable giving. To the extent that campaign contributions represent individuals giving to causes they believe are important, our findings may be applicable to other non-profit sectors. The charitable donations literature finds that the "warm glow" effect is an important reason people make donations (Andreoni 1990). Both Meer, Miller and Wulfsberg (2017) and List and Peysakhovich (2011) find that charitable donations are procyclical, and Meer and Priday (2020) show a pattern of increasing charitable donations with financial resources. A finding where an increase in home prices for homeowners causes an increase in political contributions could be consistent with that literature. However, there are other potential gains to political contributions that make it different than what we typically think of as charitable giving, as people may donate to campaigns to buy political influence (Grossman and Helpman 1994, 1996, 2001) or to influence the election (Shachar and Nalebuff 1999; Strömberg 2008). We are the first to document how campaign donations—as opposed to charitable donations —respond to potential resource changes through house price shocks.

Third, our work ties into a large and growing literature that studies how housing prices

[3]Stratmann (2005) reviews this literature.

affect a variety of household decisions. For example, Dettling and Kearney (2014) and Lovenheim and Mumford (2013) study the effects of house prices on fertility, and both studies provide evidence that children are normal goods. Lovenheim (2011) shows that for homeowners, additional equity increases college attendance rates for their children. Further, Chetty, Sandor and Szeidl (2017) shows that house prices affect investment portfolios.[4] To the best of our knowledge, this is the first paper that ties house prices to political participation.[5]

Our results show that a 1% increase in housing prices increases ZIP code level contributions to Democratic presidential candidates by 0.9%, with smaller magnitudes and noisier estimates for congressional races. These effects are *largest* for ZIP codes with fewer homeowners and more renters, suggesting a potential interest in policy for renters. The effect is largest for ZIP codes where more residents hold college degrees, suggesting a wealth effect among those most likely to have home equity. At the same time, house prices do not meaningfully affect contributions to Republican candidates. When we supplement our results with vote choice and voter turnout data, we find no clear evidence that changing house prices affect turnout or vote choice.

Overall, our results show different trends, where we see some evidence of a positive effect of wealth shocks on donations, as well as an effort to influence policy when prices increase. These results suggest that we cannot simply think of campaign contributions as a normal (or even inferior) good. Contributions could reflect efforts to influence policy, where people's policy concerns vary based on the value of their housing (for owners) or their expected rents (for renters).

2 Theory

This paper explores the causal link between house prices and campaign donations, and in this section, we posit several channels through which this effect may occur. To interpret the effect of increasing house prices, we must allow for different effects for homeowners and renters; while homeowners are likely to see house price increases as increase in wealth that can be extracted through home equity lines of credit, renters are more likely to see house price increases as increases in rental prices, resulting in a lower remaining budget to spend on other goods.

The first possibility when thinking about the relationship between house prices and campaign contributions is a straightforward story of wealth. As Verba et al. (1993) note, "it is impossible to contribute to a campaign or other political cause without at least some discretionary income" (468). Individuals contributing money to electoral campaigns—since they

[4]There are many other papers that studies the effect of house prices. Farnham, Schmidt and Sevak (2011) find that relatively higher house prices allow married couples to divorce at higher rates, plausibly through selling their homes. Increased home equity allows individuals to become entrepreneurs at higher rates, according to work by Corradin and Popov (2015). Finally, Laeven and Popov (2017) examine how the findings behind house price effects are different for different populations. Specifically, the housing boom of the early 2000s decreased homeownership, marriage, and fertility rates for young Americans.

[5]While prior work asks a related question: how do economic conditions affect political behavior (Burden and Wichowsky 2014; Brunner, Ross and Washington 2011; Doherty, Gerber and Green 2006), this literature generally focuses on unemployment and does not explore house prices directly. In addition this literature ignores the contributions decision.

are not broadly representative of the American population—have been called a contributor class. Individuals who contribute differ from the general public not only with respect to income (Brady, Verba and Schlozman 1995; Ansolabehere, de Figueiredo and Snyder Jr. 2003; Bonica et al. 2013; Malbin 2013), but also age (Schlozman et al. 2012), gender (Barber et al. 2016; Thomsen and Swers 2017), race (Grumbach and Sahn 2020), and the intersectionality of race and gender (Grumbach, Sahn and Staszak 2022). In a resource model of contributions, an increase in house prices for homeowners would increase contributions by increasing home equity, while increasing home prices for renters would result in either no change or a decrease in campaign contributions through more expensive housing.

Beyond considering the demographics of the donor class, however, existing scholarship has attempted to understand exactly why individuals contribute to political campaigns. Political Action Committees (PACs)—especially corporate and trade PACs as well as corporate executives—tend to contribute based on an investor model, meaning they expect to materially benefit from their donations (Gordon, Hafer and Landa 2007; Bonica 2014; Yu 2022). However, due to campaign contribution limits and the minuscule likelihood that one individual's campaign contribution will be decisive in the outcome of an election, conventional wisdom posits that individuals give to campaigns largely as a consumption good rather than as investors (Ansolabehere, de Figueiredo and Snyder Jr. 2003; Ensley 2009). Bonica (2014) examines the tension between ideological (giving based on consumption but within one's preferred candidate or party) and strategic giving as motivations for individual donors. He then distinguishes between two types of strategic giving: the investor model where contributions are "payments in a market for votes, legislative services, and access" (373) and a partisan electoral model, which "views donors as ideologically motivated but...they engage in electorally minded strategies" (373). He finds that for individual donors, the data support the ideological model much more than either model of strategic giving.

Overall, prior work does not find evidence to suggest that individuals give strategically as investments. Instead, we expect that individuals use campaign donations as an expression of a proclivity to a specific party or candidate. If an increase in house prices makes a specific candidate seem more attractive—for example, one that will support eviction moratoria or reductions in zoning laws to allow for more apartments and lower-cost housing—an increase in donations to that type of candidate (or party) could provide support for the ideological model. Similarly, if house prices fall, homeowners may choose to financially support a previously preferred candidate who has policy ideas to support forbearance or foreclosure moratoria because the policy import is more salient. The ideological model would also predict that changing house prices should not change vote choice.

While ideological motivations are still prevalent explanations for individual donations, there is literature to suggest that individual donors—even those contributing relatively small amounts—are doing so in a strategic fashion, particularly when we consider to whom individuals are contributing. Gimpel and Lee (2008) argue that because most congressional contributions are given by individuals by out-of-district donors, strategic elements are part of the story. Specifically, they note that the competitiveness of the district is a "powerful magnet for contributions from outside the district" (Gimpel and Lee 2008), which "unques-

tionably follows the strategic logic of political competition" (384). Rhodes, Schaffner and La Raja (2018) corroborates those findings, showing that big donors can spread contributions over a wide range of targets, influencing on out-of-district races. They further show that donors with fewer financial resources were more likely to give to political parties than target individual candidates. Hill and Huber (2017) concur, finding that those who think the election has higher stakes are more likely to contribute. Bouton, Castanheira and Drazen (2018) reiterate that electoral motivation, even of small donors should not be overlooked, ultimately concluding that individuals contribute to candidates in races that are more competitive as well as to candidates who are perceived to be the underdog. Barber, Canes-Wrone and Thrower (2017) argue that donors are ideologically sophisticated in that their decisions to contribute to an incumbent based on how she performs in office. Scholarship finding that contributions are greater in contests that are competitive mirrors that showing that individuals are more likely to vote when they expect elections to be close (Shachar and Nalebuff 1999; Blais 2006; Strömberg 2008).

Taken together, these papers suggest that since we explicitly consider the amount of contributions to Democratic and Republican candidates (and parties) separately, we should be able to identify strategic contribution patterns among individual contributors. Renters living in areas that become relatively more expensive may contribute as a plea for more affordable housing policies while owners in areas with house price declines may appeal to candidates campaigning for mortgage relief through modification options, such as the Home Affordable Mortgage Program (HAMP). Specifically, if we see that increasing house prices in areas with lots of homeowners increase contributions to Republican candidates, we interpret that as an effort to affect policy. Similarly, if we see that increasing house prices in areas with fewer homeowners increase contributions to Democratic candidates, we also interpret that as a policy motivation for donating.

Should we expect different effects by party? While conventional wisdom suggests that constituents might base their votes or contributions on whether the incumbent party has improved the economy, Wright (2012) finds instead that poor economic conditions benefit Democrats, even when they are the incumbent party. As Wright notes, "unemployment is a partisan issue for voters, not a valence issue, and that the Democratic Party 'owns' unemployment" (699) meaning Democrats have convinced voters they are the ones to solve the problem.

Grossman and Hopkins' (2015) work on asymmetrical polarization may also help us understand differences with respect to partisanship. Their research finds that the two major political parties are not in fact mirror images of one another, but are instead quite different in their compositions. Grossmann and Hopkins (2015) argue that while the Democratic Party is best understood as a "coalition of social groups whose interest are served by various forms of government activity," the Republican party is "best viewed as the agent of an ideological movement whose members are united by a common devotion to the principle of limited government" (120). Based on this research, we expect to see a relationship between house prices and campaign donations for Democrats but not Republicans.

3 Data

To build our dataset, we compile information from four sources: FEC data on individual-level campaign contributions made publicly available by Center for Responsive Politics (2016), FHFA house price data, Census house prices and homeownership rates, and supply elasticities from Saiz (2010).

We begin with individual-level campaign contributions from the FEC for all election years from 1992-2016. We aggregate these data to the ZIP code level, as we have information on ZIP codes with no giving but no information on individuals who did not give. The aggregate data include total giving to all presidential candidates and all congressional candidates, as well as total contributions to the Democratic and Republican parties. For these totals, we include both direct individual contributions to the campaigns, as well as individual contributions to the national parties (Democratic and Republican National Committees, Senatorial Campaign Committees, Congressional Campaign Committees). We do not restrict congressional contributions to be within district, as Gimpel and Lee (2008) show that a typical district receives over two-thirds of its contributions from Americans living outside of the district. This study only includes general election contributions, using contributions after the nomination for presidential elections and after the end of the primary for congressional races.[6]

The structure of the data as well as campaign finance regulations lead to some patterns in the data worth mentioning. In the FEC data, contributions are reported once an individual gives at least $200. That means if an individual contributes $50 four times, she will appear in the dataset only at the fourth contribution. However, if an individual gives $50 only once, he will not be in the dataset. This suggests that we will understate the amount of total contributions.[7] To the extent that these low dollar contributions are from donors likely to be affected by house prices, we understate the effect of house prices on donations.[8] Campaign finance laws regulate the maximum amount a person is allowed to give to a candidate or a party. Beginning just after the 2002 midterm elections, the Bipartisan Campaign Reform Act (BCRA) increased contribution limits from individuals to index contributions to inflation. Table A.1 shows these limits to candidates and parties, respectively by year.[9] We will include year fixed effects in our specifications to control for differences in national changes in campaign finance over time.[10] We use annual CPI data less housing to index our campaign

[6]To determine congressional general election contests, we determine the date for each House and Senate primary election by state.

[7]It may at first seem like a wise idea to use monthly variation in house prices and campaign donations. However, FEC data report the aggregate contribution at the last time the individual contributes to a candidate. For example, if an individual donates $1,000 in August, $500 in September, and $250 in October, she will only show up in the data as having contributed $1,750 in October. This would make contributions in the last months of the election larger than they are.

[8]Gimpel and Lee (2008) point out that in 2000 and 2004, contributions under $200 only accounted for 10-12 percent of candidates' total funds.

[9]Further, the 2010 Citizens United legislation allowed outside groups and corporations to spend money in support of candidates independent of campaigns. Contributions in support of Super PACs do not have to be reported to the FEC, and thus are not included in the analysis.

[10]If we drop the 2016 election, which had a high proportion of self-financing from the Republican candidate, our results remain consistent. These results are in Table B.2.

contributions to inflation.

Second, we collect house price indexes (HPI) with base year 1990 from the FHFA at the ZIP code level.[11] Given the 1990 base year, each local HPI measure will be indexed to 100 in 1990. We then interact 1990 ZIP code level median house prices from the decennial Census to determine the price in each ZIP code by year. If we instead use ZIP code level house price data from Zillow, which uses its proprietary formula to calculate prices (from 1996-2016), our results remain consistent.[12]

Third, we obtain supply elasticity measures directly from Saiz (2010). These supply elasticities capture cross-sectional variation in the difficulty to expand housing in an area based on two components: geographic components (e.g., natural barriers like rivers or mountains) and regulatory restrictions (e.g., zoning laws and inability to build up). Areas that are more elastic have greater opportunity to expand. A map of the elasticities across the country is in Figure 1, where the measures have only been constructed for CBSAs. We thus drop all observations outside of CBSAs, as well as the greyed out areas that do not have associated supply elasticities. This biases our sample to include areas that are more likely to favor Democrats than Republicans. The city with the most inelastic supply is Los Angeles-Long Beach-Glendale, California, and the city with the most elastic supply is Pine Bluff, Arkansas.

Our instrument relies on an interaction of a fixed characteristic, supply elasticities, and a time-varying factor, national house prices. We interact the elasticity measures with national annual house prices from the FHFA. Areas with relatively higher supply elasticities and hence more elastic supply of housing will be able to respond to higher prices by increasing inventory. This means that local house prices will rise by relatively less than other cities with lower elasticities of supply, or more inelastic supply.[13]

Fourth, we collect ZIP code-level homeownership rates and the fraction of residents who hold a bachelors degree or more from the 1990 decennial Census, before our FEC data begin. We compile these data because we are interested in seeing the heterogeneity in effect sizes by areas that have relatively more or less homeowners and a more or less educated population. Specifically, increases in house prices may result in renters having a relatively higher proportion of their income devoted to housing and simultaneously allow homeowners to experience positive income effects via home equity. Further, areas with more residents that completed college are likely to have higher levels of wealth. We use ex ante rates since prices and homeownership rates or college completion rates may be endogenously determined. Our contributions data begin in 1992, and our two Census measures are from 1990.

Our merge of these four datasets leaves 6,537 ZIP codes in 247 CBSAs, spanning 7 presidential election years from 1992-2016 and 13 congressional elections over the same timeframe. Our full presidential sample includes 45,727 observations. Of all ZIP codes in the presidential election sample (with house price data and in CBSAs), only 13 never had contributions to any candidate in any year. Including midterm elections yields a greater number of observations:

[11] See Bogin, Doerner and Larson (2016) for more on the validity of these data.

[12] These results are in Table B.1.

[13] The elasticity measure interacted with national house prices has been used as an IV in other papers studying the causal effects of house prices on a variety of outcomes (Chetty, Sandor and Szeidl 2017; Dettling and Kearney 2014). We discuss the validity of the instrument in our specific setting in Section 4.

our sample size for House and Senate elections is 84,920.[14]

3.1 Descriptive Statistics

Table 1 reports means and standard deviations of contributions in thousands of dollars by party and office. Average contributions are higher in presidential races than congressional races, with Democratic candidates receiving on average more than Republicans candidates.

Average house prices are roughly $192,000 in presidential election years, and median prices are lower at $98,000 (Table A.2). Both average prices and the distribution of prices are similar in presidential and midterm election years. Mean and median homeownership rates are close to 70 percent.

The elasticity measures, which we use to construct our IV, are available at the CBSA level, and only for 220 CBSAs. In Table A.3, we compare the full sample of ZIP codes in the FEC data to ZIP codes with price data from FHFA, as well as to ZIP codes within the 220 CBSAs for which we have elasticity measures.

To visually depict the ways in which the data merge reduces the sample, we provide a series of maps in Figure 2 for presidential elections, and in Figures A.1 and A.2 for House and Senate elections. The top panel depicts the full sample of ZIP codes in the contributions data, the middle panel depicts the sample when we include only ZIP codes with FHFA data, and the bottom panel depicts the sample when we include only ZIP codes with FHFA data that also have supply elasticity measures available. The biggest change going from top to bottom is the reduction in more rural ZIP codes, particularly in the central and western regions of the country. The bottom panel reflects our final sample. Notably, the bottom panel is representative of cities, where the population of CBSAs represents 70% of Americans. The lightest color on the map is listed as 0-$200, since we cannot observe contributions less than $200.

In addition to being more rural, our final sample consists of ZIP codes gave about $750 more in presidential contests than those not in our final sample. While those in our sample gave more to both Democrat and Republican candidates than those not in our sample, there is also a small partisan split. Those in our data gave about 40 percent of their total presidential contributions to Democrats, while those not in our sample gave 38 percent of contributions to Democrats. While these two are statistically different, they are not large in magnitude. Our sample restrictions do not impede the internal validity of our results, but our results cannot necessarily be extrapolated away to more rural areas.

4 Empirical Strategy

To empirically investigate the link between house prices and campaign contributions, we use an IV strategy. While an OLS specification can control for differences within ZIP codes over time, as well as national differences across election cycles, house price fluctuations could still be correlated with some unobservable time-varying local economic characteristics

[14] We lose observations when we log our dependent variable of interest. However, these full counts are displayed in our quantile regressions.

that are also correlated with the propensity to give. Since we cannot pinpoint the specific direction of the omitted variable bias, or control for factors that are unobservable to the econometrician, we employ an IV strategy to estimate the causal effects of house prices on campaign donations. This instrument relies on cross-CBSA differences in the elasticity of supply, based on both regulatory environment and natural barriers. Those cities with more inelastic supply, such as San Francisco, have greater responses to house price increases, while cities with more elastic supply, such as Houston, can simply build more to respond to increased housing demand. We interact these elasticities (E_c), provided by Saiz (2010), with logged annual national prices from FHFA (P_y) to create our instrument, $E_c \times ln(P_y)$. This instrument, $Z_{c,t}$ varies by city (CBSA) and year.

Our IV strategy is captured in Equation (1).

$$\begin{aligned} ln(C_{z,t}) &= \beta_0 + \beta_1 \widehat{ln(P_{z,t})} + \beta_2 V_{z,t} + \gamma_t + \eta_z + \epsilon_{z,t} \\ ln(P_{z,t}) &= \alpha_0 + \alpha_1 Z_{c,t} + \alpha_2 V_{z,t} + \gamma_t + \eta_z + \zeta_{z,t} \end{aligned} \tag{1}$$

In Equation (1), we include ZIP code level fixed effects (η_z) and year fixed effects (γ_t). $(C)_{z,t}$ represent total contributions in a given race (e.g., President, Senate, or House), and we split contributions by party (Republican or Democrat). $P_{z,t}$ indicates house prices in ZIP code z in year t. $V_{z,t}$ include time-varying ZIP code-level control variables, including the fraction of residents with a college degree or more, the fraction of residents without a high school diploma, the fraction of residents 65 or older, the fraction of residents under 18, median household income, and the fraction of homeowners.[15]

$$\begin{aligned} \text{Stage 2: } ln(C_{z,t}) &= \beta_0 + \sum_{i=1}^{4} \beta_i \widehat{ln(P_{z,t}) \times Di_z} + \beta_3 V_{z,t} + \gamma_t + \eta_z + \epsilon_{z,t} \\ \text{Stage 1a: } ln(P_{z,t}) \times D1_z &= \theta_0 + \theta_1 Z_{c,t} + \theta_2 Z_{c,t} \times D1_z + \theta_3 V_{z,t} + \gamma_t + \eta_z + \zeta_{z,t} \\ \text{Stage 1b: } ln(P_{z,t}) \times D2_z &= \theta_0 + \theta_1 Z_{c,t} + \theta_2 Z_{c,t} \times D2_z + \theta_3 V_{z,t} + \gamma_t + \eta_z + \zeta_{z,t} \\ \text{Stage 1c: } ln(P_{z,t}) \times D3_z &= \theta_0 + \theta_1 Z_{c,t} + \theta_2 Z_{c,t} \times D3_z + \theta_3 V_{z,t} + \gamma_t + \eta_z + \zeta_{z,t} \\ \text{Stage 1d: } ln(P_{z,t}) \times D4_z &= \theta_0 + \theta_1 Z_{c,t} + \theta_2 Z_{c,t} \times D4_z + \theta_3 V_{z,t} + \gamma_t + \eta_z + \zeta_{z,t} \end{aligned} \tag{2}$$

In order to determine if the effect of house prices on campaign contributions differs by areas with greater proportions of renters, we interact prices with homeownership rates from 1990, before our contributions data begin, in a separate specification. These results assume that pre-period homeownership rates are orthogonal to campaign donations in a given estimation period year and ZIP code. We estimate Equation (2), where Di_z is a dummy that equals one if the ZIP code is in the quartile i in terms of its 1990 homeownership rate and zero otherwise. Since there are four quartiles, we do not include the overall effect in

[15]These variables come the 1990 decennial Census for 1992-2000, the 2000 decennial Census for 2002-2010, and the 2006-2011 ACS average for 2012-2016.

the second stage. $\widehat{ln(P_{z,t})} \times Di_z$, represents the interaction of interest.[16] We have four first stages to account for the interaction.

In an additional specification, we change D_z to measure education, using the fraction in the ZIP code with a college degree or more in 1990. Again, we choose 1990, since it is before any of our contribution data begin. We use the same method as we do with homeownership rates, where we interact the education variable in quartiles with the predicted house price measure.[17]

Since our instrument varies at the CBSA by year-level, we are careful to two-way cluster our standard errors by CBSA and year; our standard errors account for heteroskedasticity.

Instrumental variable specifications identify a local average treatment affect (LATE) among "compliers." In our setting, compliers are areas with local price changes that respond to national house price shocks based on their ability to rapidly expand housing. If areas have local markets that are able to hold prices constant, they would not be considered a complier. In an extreme case, this would be a city where prices were required to remain fixed.

We explore a variety of robustness checks in Section 5.1. We choose a log-log specification in our main results due to the skewed nature of the contributions data, and so we can interpret our results as an elasticity. However, we show robustness to a quantile regression specification, as that does not forces us to drop ZIP codes with 0 giving.[18]

The primary assumption is that absent their relationship with house prices, the interaction between supply elasticities and national trends in house prices are uncorrelated with campaign donations, conditional on time-varying observable demographic characteristics. One violation to the exclusion restriction would be that evolving characteristics of the housing market outside of prices bring in people who are more likely to donate to Democrats. We think this is unlikely for three reasons. First, we show that there is no effect of house prices on vote choice, suggesting there are not similar processes that affect both house prices and partisanship. Second, migration rates not sensitive to the housing market or labor demand (Molloy, Smith and Wozniak 2011). Third, many economic processes are capitalized into house prices, such as schools (Black 1999) and cancer clusters (Davis 2004).

As a robustness check, we use national prices from the year prior to the election (an odd-numbered year when there is no election) interacted with supply elasticities as our instrument. This would allow the year fixed effect for our contributions to be separate from the national trend in house prices.[19]

[16] In this specification, we do not control for changing homeownership rates over time, as this could be endogenously determined.

[17] In this specification, we do not control for educational composition of ZIP codes over time, as we want to cleanly interact our instrument with pre-treatment trends.

[18] One may suggest adding one to our log measures, but since it is infeasible to give one dollar in contributions and be observed in the data, this results in an even more skewed, left-censored, distribution with a large gap.

[19] These results are in Table B.5 and are consistent with our main findings.

5 Results

Table 2 reports the average effect of local house prices on aggregate ZIP code-level campaign donations using the IV strategy. The bottom panel reports the validity of the IV, where F-statistics remain between 15.3 and 21.5 across specifications, surpassing the Stock and Yogo (2005) criteria.[20] Recent work by Lee et al. (2021) suggests a correction to second stage standard errors on the coefficient associated with the endogenous regressor, based on the first stage F-statistics. Given our first stage F-statistic values, we must multiply our Presidential contest standard errors by roughly 1.5 and our Senate and House standard errors by 1.3. We verify that in no case does this change our interpretation of our statistical significance throughout. Similar to previous work, we show that areas with higher elasticity values and price increases have relatively lower house prices than those with lower elasticities and price increases.

The results in Table 2 report that a 1% increase in house prices increases aggregate ZIP code-level contributions by 0.5%, though this is not statistically different from zero. This overall result masks heterogeneity across parties. For Democratic presidential candidates, a 1% increase in house prices increases ZIP code-level contributions by 0.9%, and for Republican presidential candidates, house prices and contributions are negatively related, though we cannot rule out a null effect. Since these effects represent aggregate ZIP code level contributions, mean populations are approximately 19,000. Thus, the effects are modestly sized, are close to zero for Republicans, and could potentially represent an increase in only one to two donors for Democrats.

Democratic congressional candidates also see increases in donations after local house prices increase. The magnitude for House candidates is similar to that of presidential candidates, though it is smaller for Senate candidates; neither are statistically different from zero after doing the second stage standard error corrections by Lee et al. (2021). The congressional effects are not statistically different from zero for Republican congressional candidates, though the relationship remains negative in sign.

In order to better understand these relationships, we explore heterogeneity in the effects based on two variables that are likely correlated with potential wealth shocks: homeownership rates and the fraction of residents with a bachelors degree or more. Areas with more homeowners potentially have more residents with positive wealth shocks when prices increase. However, data from the American National Election Studies (ANES) from 1992-2012 show that of those identifying as Republicans, 76% are homeowners, whereas only 60% of those identifying as Democrats are homeowners.[21] This suggests that additional home equity may not be enough of a wealth increase to move Republicans to donate more, but higher rental prices may cause individuals to contribute. Further, college-educated individuals tend to have higher wealth and are more likely to be homeowners.

Figure 3 reports the results by homeownership and party. Specifically, we estimate the second stage of our IV specification but interact local prices with homeownership rates in 1990 in quartiles. We plot these results in a figure, where we report 95% confidence intervals

[20] Since our model is just-identified, we do not have to perform an over-identification test.

[21] These means are statistically different from each other at the 1% level.

for each estimate of β_1 for each quartile of homeowners on the y-axis. For Democratic candidates across all offices, the largest effect of house price increases on donations is from the first quartile of homeownership, where the highest fraction of residents in the ZIP code are renters. This finding seems surprising at first, since higher prices in areas with fewer homeowners are likely to reflect higher rental prices. However, it could be that those in ZIP codes with higher rents back candidates who support policies that may improve access to affordable housing. These givers may be reacting to a preference for policy. This is consistent with work on economic shocks and voter preferences for redistribution (Brunner, Ross and Washington 2011), where a negative economic shock increases preferences for redistribution.

The effect in Figure 3 is largest for the first quartile of homeownership, though Democratic candidates also exhibit positive effects of house prices on donations for the remaining quartiles across presidential and House elections. These findings could suggest a wealth effect: increased house prices reflect greater wealth, greater access to home equity, and greater money to spend on consumable goods like donations. Republican candidates experience no meaningful increases in donations due to increased house prices across any of the races or homeownership quartiles.

To further explore the potential positive wealth shock hypothesis, we consider heterogeneity by the fraction of residents with a college degree or more—those who are most likely to be homeowners and have home equity. For example, in the National Financial Capability Study, those with a college degree or more are 15 percentage points more likely to be homeowners, have eight percentage points more equity in their home at the time of purchase, and are seven percentage points less likely to be underwater conditional on being a homeowner.[22] Using our data from the 1990, 2000, and 2010 Censuses and regressing percent of homeowners on percent of college plus (with ZIP code and year fixed effects) results in a positive relationship: a one percentage point increase in college-completing population is associated with a 0.21 percentage point increase in homeownership with a standard error of 0.015.

Figure 4 documents the effect of house prices on campaign donations by quartile. Areas with more educated populations have a greater effect of house prices on Democratic campaign contributions across all three offices. The pattern is a clear uptick of effect sizes by quartiles of the rate of college degrees in the ZIP code.[23] This provides more evidence for a wealth effect: when home equity increases, more money goes towards Democratic campaigns.

Our findings on partisanship—where we consistently find an effect for Democratic but not Republican candidates—align with prior work. As in Grossman and Hopkins' (**?**) outlined theory about the differences in party structure, it makes sense that contributions to the GOP would not be as affected by changing housing prices while contributions to Democratic candidates would be much more sensitive to current economic conditions. Further, our results are similar to those of Wright (2012): individuals' contributions to Democratic candidates are driven by economic conditions, while contributions to Republican candidates are not.

[22]The home equity at time of purchase is from 2012 and 2015, and the other measures also include the 2018 data. The fraction of the purchase price the down payment covered was not asked about in 2018.

[23]Using our county-level vote return data, we can see that a 1 percentage point increase in the fraction with a college degree or more is associated with a 1.3 percentage point increase in the percent voting for a Democrat in a presidential election with a standard error of 0.211. The positive correlation suggests that places with more educated populations lean Democratic.

While Wright (2012) studies unemployment, we find the same relationship holds for another economic indicator.

However, our findings that house price increases benefit Democrats differ from the findings of Bonica and Rosenthal (2015) on the effects of wealth on campaign donations. Instead, they find larger elasticities for Republicans, though they study only the wealthiest 400 Americans, which likely explains the difference.

Our main results suggest that some people increase donations to Democrats in order to influence policy, while others increase donations to Democrats due to positive wealth shocks. To complement these results, we use the same IV specification using presidential data on turnout and vote choice as the outcome of interest. To do this, we modify Equation 1 to include county instead of ZIP code fixed effects. These results (Table 3) suggest that house prices do not meaningfully affect turnout or vote choice. While the effects on vote choice suggest a leaning towards Democrats and away from Republicans when house prices increase that is consistent with our campaign donations findings, none of these estimates are statistically different from zero. Further, Figure 5 shows that the relationship is constant across homeownership and college completion rates. Thus, wealth shocks do not change preferences, but they do encourage individuals to contribute money to candidates, consistent with the ideological model.

5.1 Robustness

In this section, we perform four robustness checks. First, we show that our findings are robust to using alternative house price data from Zillow in Table B.1.

Our second robustness check drops the 2016 election, given that 2016 was an untraditional election with a candidate that largely self-financed, which may have led to different donation patterns. These results are in Tables B.2, and are not substantively different from our baseline results.

Third, we show that our results are robust to alternate functional forms, including a quantile regression that reports the effects at the median in Table B.3.

Fourth, we drop all presidential election years from the analysis of congressional elections, to be sure the presidential race is not affecting donations to the House or Senate. These results are in Table B.4, and again are similar to our baseline results.

Fifth, remember that to construct our IV, we use the national trend in house prices. Our specification includes year fixed effects. To make sure the year fixed effects and the national trend in house prices are separate, we use national prices from the year prior to the election interacted with supply elasticities as our instrument. These results are in Table B.5 and are consistent with our main findings.

6 Conclusion

This paper estimates the causal impact of house prices on campaign giving. While fluctuations in house prices do not change contributions to Republicans, increases in house prices benefit Democratic candidates. The effects are sizable: a 1% increase in local house

prices increases aggregate ZIP code-level contributions to Democratic presidential candidates by 0.9%. These effects are also present for other Democratic congressional offices, though smaller in magnitude and not always statistically different from zero.

A simple economic story would suggest that areas with many renters have relatively less income to spend on other goods (e.g, campaign donations) and areas with more homeowners would have relatively more equity and feel relatively richer. However, we find that the effect of housing prices on campaign contributions for Democratic candidates is positive for all quartiles of homeownership. In fact, the effect is *larger* for areas with relatively more renters. We posit that this effect is potentially explained by a desire for policy change, where renters who have smaller budgets due to increasing rents contribute to influence policy.

We do find evidence of a wealth effect. Areas with the highest rate of college completion have the largest effects of house price increases on Democratic campaign donations. This relationship is consistent across presidential, House, and Senate contests. Further, the effect of house prices on Democratic donations increases as the fraction of college degrees in an area increases. Since those with college degrees are more likely to have home equity, we expect that this relationship is indicative of additional wealth driving more giving. There is no effect of house prices on giving to Republican candidates across any quantile of the education distribution or across elections.

Vote choice data further show that house price increases do not meaningfully affect vote choice or voter turnout, which is consistent with the ideological model of giving. The results, taken together, suggest that campaigns intending to maximize contributions need to understand how local economic factors, such as house prices, can affect party preferences and donations.

To illustrate the magnitude of our effects, an average house price increase of 2% corresponds to an increase in ZIP code-level contributions of 1.8%. A quick back-of-the-envelope calculation for our 6,537 ZIP codes in study suggests that this increase resulted in over $1.3 million to a U.S. presidential candidate, with no additional funds going to Republicans. Campaigns would be well-suited to understand how changing prices may affect their ability to fundraise. However, we caution readers that our study is limited to CBSAs, which does not speak to how changing house prices affect more rural—and likely more Republican—areas.

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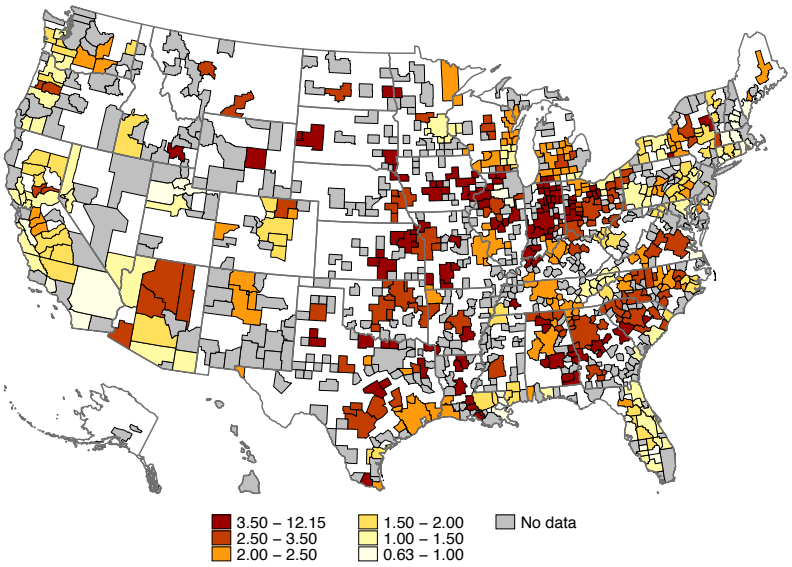
7 Tables and Figures

Fig. 1: Elasticity of Supplies



Notes: Data from Saiz (2010). White areas indicate that they are not represented by CBSAs. Grey areas are not covered by the elasticity measures.

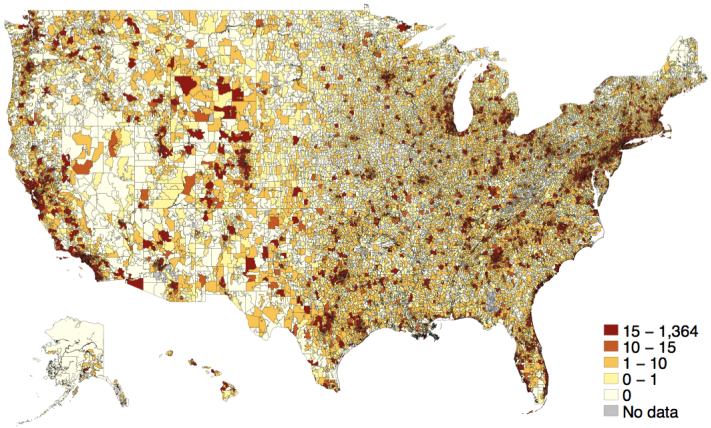
Table 1: Summary Statistics

	Total	Dem	GOP
President			
Amount	22.530	11.608	10.922
	(57.951)	(37.814)	(28.581)
Count	19.068	11.240	7.829
	(45.552)	(37.725)	(16.126)
House			
Amount	7.483	3.474	4.008
	(19.011)	(11.130)	(10.463)
Count	15.206	7.203	8.003
	(31.004)	(18.391)	(16.586)
Senate			
Amount	4.929	2.504	2.424
	(15.875)	(9.769)	(8.513)
Count	8.594	4.626	3.968
	(22.205)	(14.849)	(10.603)

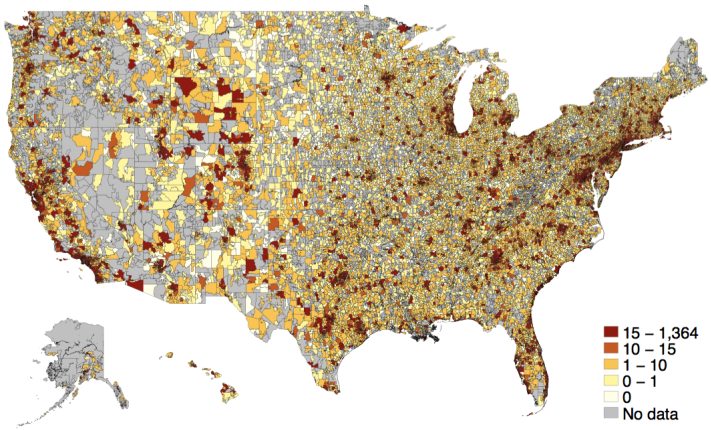
Notes: Means reported in thousands of dollars for amounts and in levels for counts, with standard deviations in parentheses. Campaign contributions from the Federal Election Commission from 1990-2016. All contributions dollars are adjusted to 1990 dollars using the CPI less housing.

Fig. 2: Presidential Campaign Donations with areas Covered by Price Data (2012)

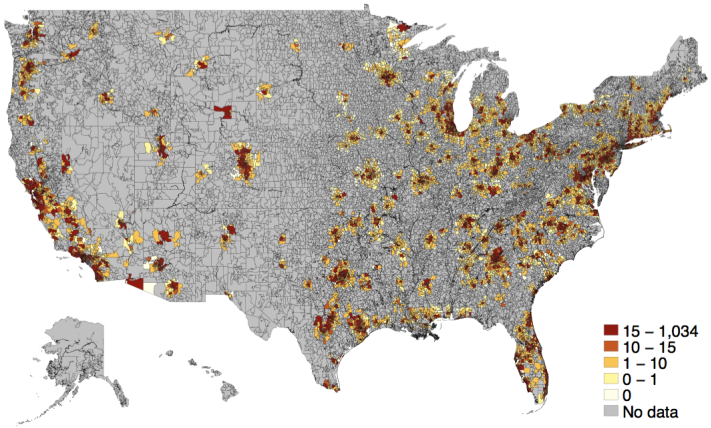
All ZIP Codes



ZIP Codes with Price Data



ZIP Codes in CBSAs with Elasticity



Notes: Presidential campaign contributions in thousands of 1990 dollars from Federal Election Commission. The top panel shows donations across all ZIP codes; the middle panel displays contributions among ZIP codes that also have price data from the FHFA; the bottom panel displays contributions among ZIP codes that are included in CBSAs that have elasticity measures from Figure 1. The bottom panel is our final sample.

Table 2: Instrumental Variables: House Prices and Contributions, log-log

IV: Stage 2

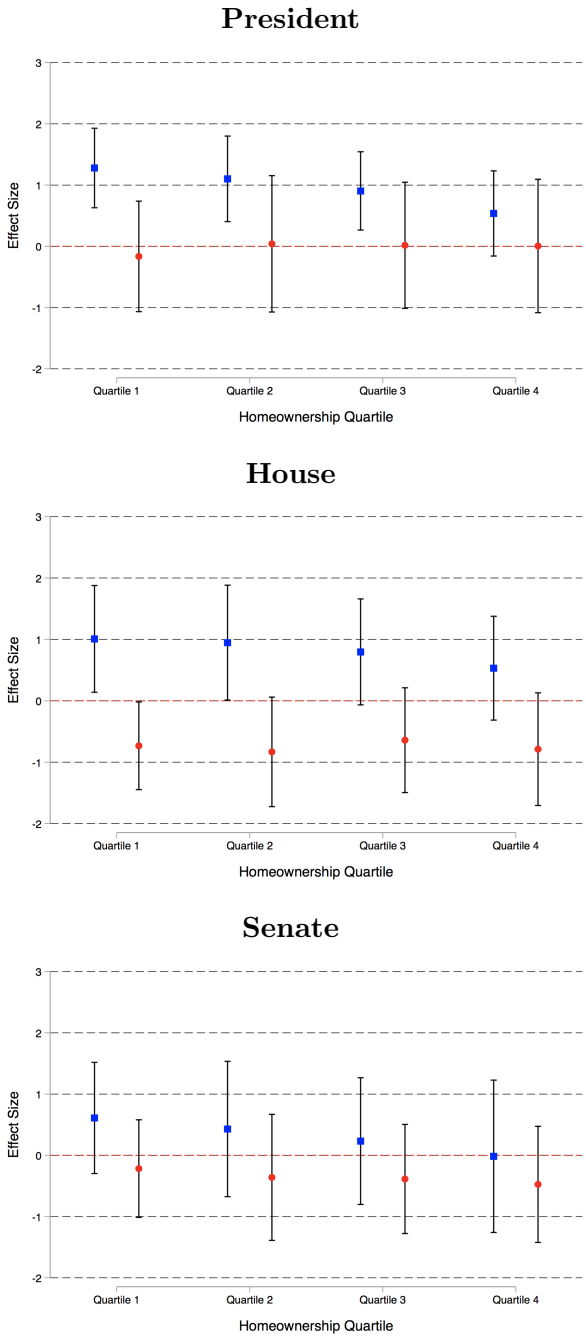
	DV =ln($ Contributed)		
	Total	Dem	GOP
President			
ln(Price)	0.485	0.915**	-0.0663
	(0.396)	(0.337)	(0.377)
N	38803	29289	34848
House			
ln(Price)	-0.00763	0.774*	-0.731
	(0.369)	(0.398)	(0.440)
N	74494	59152	66995
Senate			
ln(Price)	-0.0785	0.256	-0.360
	(0.428)	(0.435)	(0.428)
N	60414	44565	49188

IV: Stage 1

	DV =ln(House Price)		
Sample	Pres	House	Senate
Z	-0.14762***	-0.16624***	-0.16283***
	(0.0374)	(0.0385)	(0.0352)
N	38803	74493	60414
F-Stat	15.31	21.51	21.39

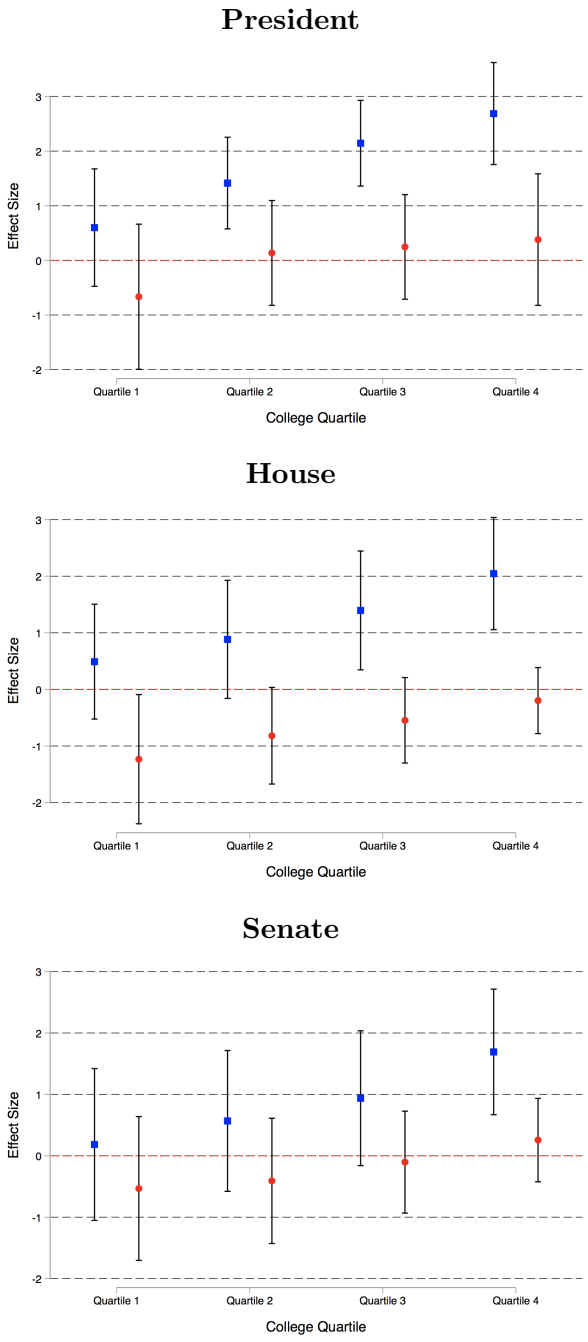
Notes: Robust standard errors two-way clustered at the CBSA-by-year level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Year and ZIP code level fixed effects included. Additional time-varying ZIP code-level controls include median household income, percent of ZIP code under 18, percent of ZIP code over 65, percent of ZIP code with a college degree or more, percent of ZIP code without a high school diploma, and percent of homeowners in the ZIP code. The instrument, Z, interacts logged U.S. house prices and the elasticity of supply of each city from Saiz (2010). Each observation is a ZIP code by election year. Data come from the FEC and FHFA and include elections from 1992-2016. Lee et al. (2021) suggests that due to the size of the F-statistics, second stage standard errors should be scaled by 1.5 for presidential contests and by 1.3 points for congressional contests.

Fig. 3: IV Effects of House Prices on Campaign Contributions by Homeownership Rate Quartiles



Notes: β_i in Equation 2 for quartiles 1-4 estimates reported with 95% confidence intervals for the effect of a 1% increase of house prices on campaign donations by quartile of homeownership rate. The lowest quartile has the lowest rate of homeownership. Blue squares represent the effects for Democratic candidates; red circles represent the effects for Republican candidates. Standard errors are two-way clustered at the CBSA-by-year level. Year and ZIP code level fixed effects included in the model. Additional time-varying ZIP code-level controls include median household income, percent of ZIP code under 18, percent of ZIP code over 65, percent of ZIP code with a college degree or more, and percent of ZIP code without a high school diploma. The instrument, Z, interacts logged U.S. house prices and the elasticity of supply of each city from Saiz (2010). Each observation is a ZIP code by election year. Data come from the FEC and FHFA and include elections from 1992-2016. Lee et al. (2021) suggests that due to the size of the F-statistics, second stage standard errors should be scaled by 1.5 for presidential contests and by 1.3 points for congressional contests.

Fig. 4: IV Effects of House Prices on Campaign Contributions by College Graduate Rate Quartiles



Notes: β_i in Equation 2 for quartiles 1-4 estimates reported with 95% confidence intervals for the effect of a 1% increase of house prices on campaign donations by quartile of the percent of college graduates in a ZIP code. The lowest quartile has the lowest rate of college degrees. Blue squares represent the effects for Democratic candidates; red circles represent the effects for Republican candidates. Standard errors are two-way clustered at the CBSA-by-year level. Year and ZIP code level fixed effects included in the model. Additional time-varying ZIP code-level controls include median household income, percent of ZIP code under 18, percent of ZIP code over 65, and percent of homeowners in the ZIP code. The instrument, Z, interacts logged U.S. house prices and the elasticity of supply of each city from Saiz (2010). Each observation is a ZIP code by election year. Data come from the FEC and FHFA and include elections from 1992-2016. Lee et al. (2021) suggests that due to the size of the F-statistics, second stage standard errors should be scaled by 1.5 for presidential contests and by 1.3 points for congressional contests.

Table 3: Instrumental Variables: House Prices, Voter Turnout, and Vote Choice

IV: Stage 2

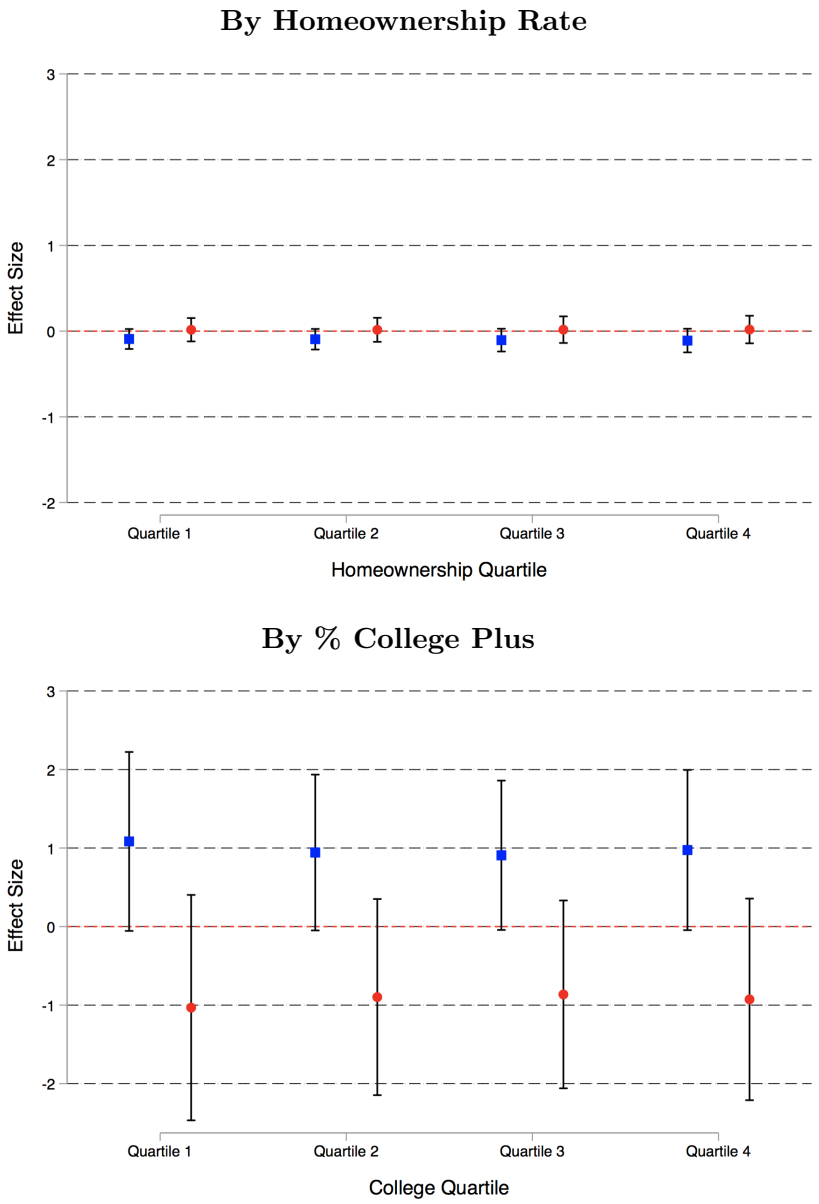
	Turnout	% Dem	% GOP
President			
ln(Price)	0.130	0.129	-0.131
	(0.108)	(0.109)	(0.131)
N	4153	4153	4153
Mean DV	0.557	0.418	0.517

IV: Stage 1

DV =ln(House Price)	
Z	-0.05619***
	(0.0193)
N	4153
F-Stat	8.508

Notes: Robust standard errors two-way clustered at the CBSA-by-year level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Year and county level fixed effects included. Additional time-varying county level controls include median household income, percent of county under 18, percent of county over 65, percent of county with a college degree or more, percent of county without a high school diploma, and percent of homeowners in the county. The instrument, Z, interacts logged U.S. house prices and the elasticity of supply of each city from Saiz (2010). Each observation is a county by election year from 1992-2016.

Fig. 5: IV Effects of House Prices on Vote Choice



Notes: β_i in Equation 2 for quartiles 1-4 estimates reported with 95% confidence intervals for the effect of a 1% increase of house prices on campaign donations by quartile of homeownership rate (top panel) and fraction of the county with college degrees or more (bottom panel). Blue squares represent the effects for Democratic candidates; red circles represent the effects for Republican candidates. Standard errors are two-way clustered at the CBSA-by-year level. Year and county level fixed effects included in the model. Additional time-varying county level controls include median household income, percent of county under 18, percent of county over 65, percent of county with a college degree or more (top panel only), percent of county without a high school diploma (top panel only), and percent of homeowners in the county (bottom panel only). The instrument, Z, interacts logged U.S. house prices and the elasticity of supply of each city from Saiz (2010). Each observation is a ZIP code by election year. Data come from the FEC and FHFA and include elections from 1992-2016.

8 Appendix A: Data Appendix

Table A.1: Campaign Contribution Limits by Year

Year	To Candidate	To National Committees
2016	$2,700	$33,400
2014	$2,600	$32,400
2012	$2,500	$30,800
2010	$2,400	$30,400
2008	$2,300	$48,500
2006	$2,100	$26,700
2004	$2,000	$25,000
$\leq$ 2002	$1,000	$20,000

Notes: Data come from Federal Election Commission campaign contributions limits.

Table A.2: Summary Statistics for House Prices and 1990 Demographic Characteristics

	Mean	25th	50th	75th	Std Dev
Price (Pres Years)	192.46	97.77	139.24	222.11	166.01
N	45,727				
Price (Midterm Years)	195.05	99.73	140.25	224.95	165.44
N	39,199				
% Homeowner (1990)	0.69	0.60	0.71	0.80	0.16
N	6,531				
% College Plus (1990)	0.24	0.14	0.21	0.32	0.14
N	6,531				

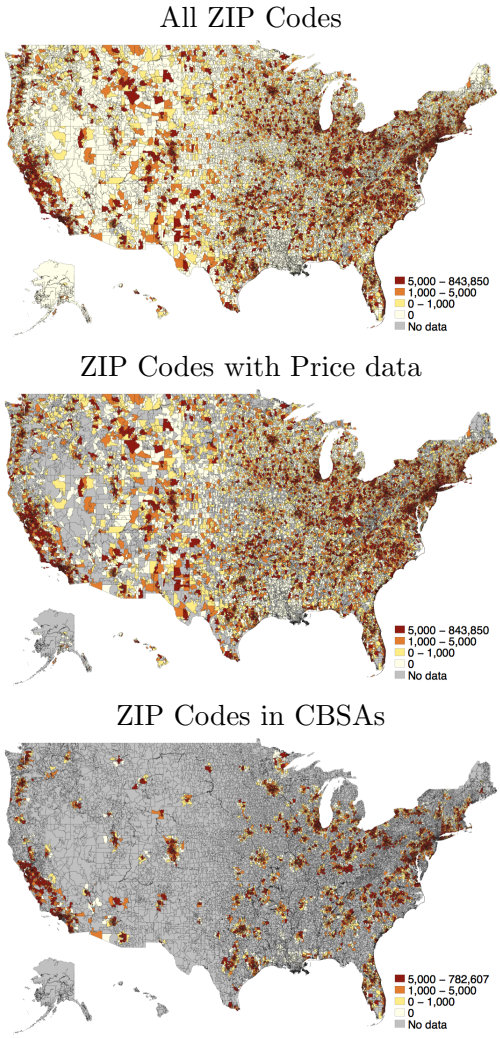
Notes: Summary statistics for all ZIP codes in our final dataset. House price data from the FHFA from 1992-2016. 1990 homeownership and college degree rates from the US Census Bureau.

Table A.3: Summary Statistics for Contributions in all ZIP Codes

	All			With Price			With Price and Elasticity		
	25th	50th	75th	25th	50th	75th	25th	50th	75th
President									
Amount	0	712	3,330	395	1,869	6,906	401	1,925	7,383
Amount D	0	23	1,048	0	429	2,637	0	463	2,833
Amount R	0	324	1,663	142	859	3,160	142	879	3,310
Count	0	2	9	1	5	17	1	5	18
Count D	0	1	3	0	1	7	0	2	7
Count R	0	1	5	1	3	8	1	3	8
House									
Amount	0	623	3,061	302	1,758	5,863	312	1,850	6,250
Amount D	0	0	1,006	0	437	2,204	0	467	2,330
Amount R	0	279	1,656	0	832	3,135	0	875	3,325
Count	0	2	8	1	5	14	1	5	14
Count D	0	0	3	0	1	5	0	2	6
Count R	0	1	4	0	2	7	0	3	8
Senate									
Amount	0	125	1,353	0	565	2,870	0	600	3,029
Amount D	0	0	400	0	0	1,059	0	0	1,144
Amount R	0	0	593	0	154	1,369	0	165	1,424
Count	0	1	3	0	2	6	0	2	7
Count D	0	0	1	0	0	3	0	0	3
Count R	0	0	2	0	1	3	0	1	3

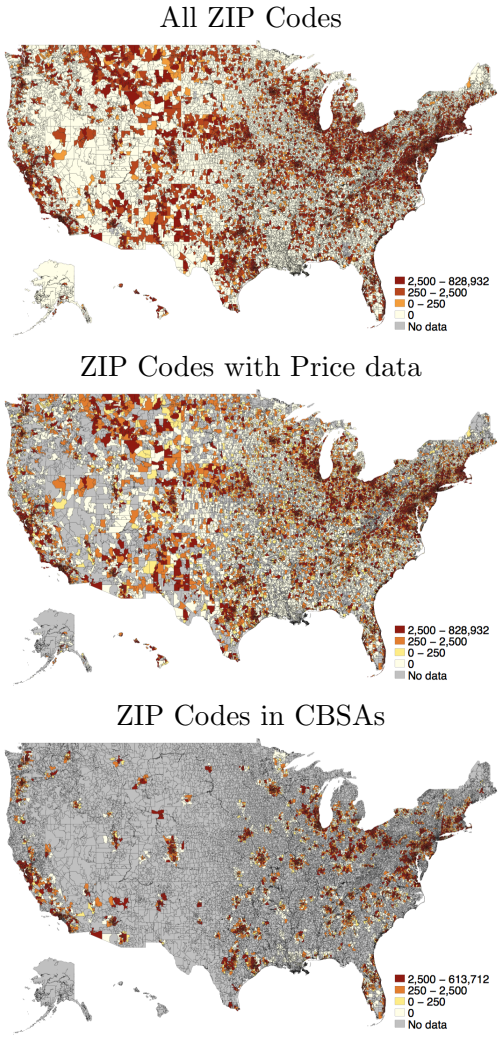
Notes: Campaign contributions in 1990 dollars from Federal Election Commission (1992-2016). The first three columns show donations across all ZIP codes; the second three columns display contributions among ZIP codes that also have price data from the FHFA; the third three columns show contributions among ZIP codes that are included in CBSAs that have elasticity measures from Figure 1. The third three columns are our final sample.

Fig. A.1: 2012 House Campaign Donations with areas Covered by Price Data and in CBSAs with Elasticity



Notes: House campaign contributions in thousands of 1990 dollars from Federal Election Commission. The top panel shows donations across all ZIP codes; the middle panel displays contributions among ZIP codes that also have price data from the FHFA; the bottom panel displays contributions among ZIP codes that are included in CBSAs that have elasticity measures from Figure 1. The bottom panel is our final sample.

Fig. A.2: 2012 Senate Campaign Donations with areas Covered by Price Data and in CBSAs with Elasticity



Notes: Senate campaign contributions in thousands of 1990 dollars from Federal Election Commission. The top panel shows donations across all ZIP codes; the middle panel displays contributions among ZIP codes that also have price data from the FHFA; the bottom panel displays contributions among ZIP codes that are included in CBSAs that have elasticity measures from Figure 1. The bottom panel is our final sample.

9 Appendix B: Robustness Checks

Table B.1: Instrumental Variables: House Prices and Contributions, using Zillow Data

IV: Stage 2

	DV =ln($ Contributed)		
	Total	Dem	GOP
President			
ln(Price)	0.885**	0.774*	0.245
	(0.331)	(0.351)	(0.312)
N	43301	30419	38874
House			
ln(Price)	0.189	0.652	-0.326
	(0.193)	(0.371)	(0.187)
N	79108	58385	69514
Senate			
ln(Price)	0.0682	0.555	-0.553
	(0.430)	(0.426)	(0.338)
N	60561	43924	47009

IV: Stage 1

	DV =ln(House Price)		
Sample	Pres	House	Senate
Z	-0.21243***	-0.23963***	-0.24832***
	(0.0367)	(0.0415)	(0.0435)
N	43301	79108	60561
F-Stat	33.56	32.20	32.62

Notes: Robust standard errors two-way clustered at the CBSA-by-year level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Year and ZIP code level fixed effects included. Additional time-varying ZIP code-level controls include median household income, percent of ZIP code under 18, percent of ZIP code over 65, percent of ZIP code with a college degree or more, percent of ZIP code without a high school diploma, and percent of homeowners in the ZIP code. The instrument, Z, interacts logged U.S. house prices and the elasticity of supply of each city from Saiz (2010). Each observation is a ZIP code by election year. Data come from the FEC and Zillow and include elections from 1996-2016. Lee et al. (2021) suggests that due to the size of the F-statistics, second stage standard errors should be scaled by .

Table B.2: Instrumental Variables: House Prices and Contributions, Dropping 2016

IV: Stage 2

DV =ln($ Contributed)			
	Total	Dem	GOP
President			
ln(Price)	0.209	0.836*	0.132
	(0.481)	(0.354)	(0.362)
N	32259	22522	28534
House			
ln(Price)	-0.130	0.477	-0.606
	(0.378)	(0.295)	(0.438)
N	68301	53329	61490
Senate			
ln(Price)	-0.0391	0.224	-0.263
	(0.483)	(0.474)	(0.447)
N	54492	39198	44221

Notes: Robust standard errors two-way clustered at the CBSA-by-year level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Year and ZIP code level fixed effects included. Additional time-varying ZIP code-level controls include median household income, percent of ZIP code under 18, percent of ZIP code over 65, percent of ZIP code with a college degree or more, percent of ZIP code without a high school diploma, and percent of homeowners in the ZIP code. The instrument, Z, interacts logged U.S. house prices and the elasticity of supply of each city from Saiz (2010). Each observation is a ZIP code by election year. Data come from the FEC and FHFA and include elections from 1992-2014. Lee et al. (2021) suggests that due to the size of the F-statistics, second stage standard errors should be scaled by 1.5 for presidential contests and by 1.3 points for congressional contests.

Table B.3: Instrumental Variables: House Prices and Contributions, Quantile Regressions

IV: Stage 2

DV = Zip Code Contributions in Thousands of Dollars

	Total	Dem	GOP
President			
25th Percentile	26.66472	17.26169	-4.01307
	(74.9536)	(21.8600)	(46.7524)
Median	21.43486	18.26831	-3.24092
	(294.2272)	(15.5598)	(224.3339)
75th Percentile	14.49814	19.65346	-2.08329
	(678.8117)	(21.1984)	(495.7045)
N	45718	45718	45718
Mean DV	22.53	11.61	10.92
House			
25th Percentile	5.18849	6.90496**	-2.79316
	(17.2546)	(3.4080)	(3.2778)
Median	4.21835	7.40145***	-3.37268
	(11.0999)	(2.5130)	(2.3868)
75th Percentile	2.74876	8.21057**	-4.33259
	(4.3195)	(3.2222)	(2.6721)
N	84901	84901	84901
Mean DV	7.48	3.47	4.00
Senate			
25th Percentile	1.85664	2.75574	-1.33719
	(3.3284)	(4.0249)	(11.4210)
Median	0.97696	2.58910	-1.70009
	(4.6618)	(3.3263)	(8.8153)
75th Percentile	-0.65425	2.25640	-2.47159
	(11.2646)	(5.3611)	(10.6528)
N	84901	84901	84901
Mean DV	4.93	2.50	2.42

Notes: Robust standard errors two-way clustered at the CBSA-by-year level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Independent variable of interest reported is ln(Price); quantile regressions estimated with 25th, 50th, and 75th percentile effects are presented. Year and ZIP code level fixed effects included. Additional time-varying ZIP code-level controls include median household income, percent of ZIP code under 18, percent of ZIP code over 65, percent of ZIP code with a college degree or more, percent of ZIP code without a high school diploma, and percent of homeowners in the ZIP code. The instrument, Z, interacts logged U.S. house prices and the elasticity of supply of each city from Saiz (2010). Each observation is a ZIP code by election year. Data come from the FEC and FHFA and include elections from 1992-2016.

Table B.4: Instrumental Variables: House Prices and Contributions in U.S. House & Senate, Midterm Years Only

IV: Stage 2

DV =ln($ Contributed)			
	Total	Dem	GOP
House			
ln(Price)	0.185	0.759*	-0.454
	(0.215)	(0.356)	(0.359)
N	33986	26278	30275
Mean DV	7.312	3.332	3.979
Senate			
ln(Price)	0.0222	0.149	-0.0860
	(0.538)	(0.455)	(0.556)
N	27003	18719	21781
Mean DV	4.780	2.273	2.507

Notes: Robust standard errors two-way clustered at the CBSA-by-year level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Year and ZIP code level fixed effects included. Additional time-varying ZIP code-level controls include median household income, percent of ZIP code under 18, percent of ZIP code over 65, percent of ZIP code with a college degree or more, percent of ZIP code without a high school diploma, and percent of homeowners in the ZIP code. The instrument, Z, interacts logged U.S. house prices and the elasticity of supply of each city from Saiz (2010). Each observation is a ZIP code by election year. Data come from the FEC and FHFA and include elections from 1992-2016, less presidential years. Lee et al. (2021) suggests that due to the size of the F-statistics, second stage standard errors should be scaled by 1.3 points for congressional contests.

Table B.5: Instrumental Variables: House Prices and Contributions, Using Lagged National House Prices

IV: Stage 2

	DV =ln($ Contributed)		
	Total	Dem	GOP
President			
ln(Price)	0.341	0.822*	0.00388
	(0.388)	(0.336)	(0.379)
N	38803	29289	34848
House			
ln(Price)	-0.0463	0.742*	-0.775
	(0.364)	(0.383)	(0.437)
N	74494	59152	66995
Senate			
ln(Price)	-0.111	0.242	-0.368
	(0.433)	(0.470)	(0.429)
N	60414	44565	49188

IV: Stage 1

	DV =ln(House Price)		
Sample	Pres	House	Senate
Z	-0.14442***	-0.16253***	-0.15978***
	(0.0324)	(0.0333)	(0.0330)
N	38803	74494	60414
F-Stat	19.91	23.81	23.48

Notes: Robust standard errors two-way clustered at the CBSA-by-year level in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Year and ZIP code level fixed effects included. Additional time-varying ZIP code-level controls include median household income, percent of ZIP code under 18, percent of ZIP code over 65, percent of ZIP code with a college degree or more, percent of ZIP code without a high school diploma, and percent of homeowners in the ZIP code. The instrument, Z, interacts logged U.S. house prices from the year before the election (e.g., 1995 for the 1996 election) and the elasticity of supply of each city from Saiz (2010). Each observation is a ZIP code by election year. Data come from the FEC and FHFA and include elections from 1992-2016. Lee et al. (2021) suggests that due to the size of the F-statistics, second stage standard errors should be scaled by 1.5 for presidential contests and by 1.3 points for congressional contests.