Profiting from Real Estate: So Easy a Congressman Can Do It*

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Abstract

We provide the first analysis of U.S. Congress members' real estate activity by combining their financial disclosures with property-level transactions. Active Congress members outperform average homeowners by 3.24% annually; they also outperform former members, financial professionals, and doctors. National-level market timing explains 30% of the outperformance, neighborhood-level explains 50%, and hyper-local or property-specific factors explain the remainder. A "buy-sell" index of Congress members' transactions forecasts returns on the U.S. housing index. These findings suggest that superior information drives most of the outperformance. We fail to detect side-payments or bribery, however Federal transfers are higher to places where Congress members own.

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1 Introduction

In recent years there has been a constant concern that politicians and elected officials might be using their privileged access to material information to benefit from trading in the stock market. For example, in March 2020, four senators made headlines for avoiding large losses by selling ahead of the COVID-19 stock market crash after attending confidential briefings about the virus in late January and early February.[1] Contrary to public perception, however, recent academic evidence, discussed below, suggests that Congress members are fairly mediocre investors in the stock market. The passage of pieces of legislation enforcing stricter disclosure requirements such as the Stop Trading on Congressional Knowledge (STOCK) Act as well as the efficiency and liquidity of the U.S. stock market might make it difficult to exploit private information for personal gain.[2] The same cannot be said of more opaque and illiquid markets such as real estate, by far the most important asset for the majority of households.[3]

In this paper we conduct the first, to our knowledge, comprehensive analysis of real estate transactions of members of U.S. Congress. For this purpose, we construct a new data set of real estate transactions by U.S. Congress members which we obtain by linking Congress members' annual financial disclosures to real estate transaction-level information. Our main result is that, over the period 1994–2017, U.S. members of Congress earn a return of 3.24% per year in excess of the return on real estate transactions of average homeowners. Figure 1 compares the cumulative performance of a portfolio that mimics Congress members' real estate returns to that of the U.S. real estate market from 1994 to 2017. An investment of $1,000 in the Congress members' mimicking portfolio in January 1994 would have accrued to $4,327.13 at the end of 2017, compared to $2,341.10 for an equivalent investment in the aggregate U.S. real estate market.

To understand the sources of this superior performance, we condition our analysis to both aggregated national price trends and localized price trends. We find that about 30% of the performance

[1] See, e.g., Ziolkowski (2020), *Washington Post*, March 25, 2020: "Senators dumped stocks amid the coronavirus crisis. Here's what we know about Congress and financial self-interest" and Wise (2020), *Wall Street Journal*, April 8, 2020: "Sen. Loeffler to Divest From Stocks After Criticism for Trades Ahead of Coronavirus Market Slump".

[2] See, e.g., Huang and Xuan (2018); Cherry, Heitz, and Jens (2018); Belmont, Sacerdote, and Van Hoek (2020).

[3] The current homeownership rate is 63.6% (U.S. Census Bureau, 2017) and the average household holds 40% of its assets in residential property, in contrast to 30.5% invested in financial assets (SCF, 2013).

can be attributed to national price trends and about 50% to more localized price trends. At the local level, half of the total outperformance can be explained by house price performance unrelated to national trends, within a 10- to 20-mile radius from the location of the Congress member's transaction. This local geographical area roughly corresponds to a Metropolitan Statistical Area (MSA). These findings imply that politicians appear to have national-level market timing ability and suggest the presence of an information channel that underlies their superior performance. In addition, the localized analysis indicates that members of Congress appear to be able to choose the right MSAs at the right times. These politicians may either benefit from superior information, or may influence local outcomes in a way that affects real estate valuations. The remaining 20% of the outperformance, or 0.7% per year of excess return, cannot be explained by national or local price trends. This estimate is unaffected by the introduction of more localized price trends though it is not statistically different from zero. We conclude that the remaining outperformance must be linked either to hyper-local factors or to the specific property in the Congress member transaction.

We next investigate possible mechanisms that could explain the outperformance of Congress members. Specifically, we consider four possible channels, based on (i) investor sophistication: Congress members may be more savvy real estate investors, real estate developers, or bargainers; (ii) superior information: Congress members may be privy to better information about future house prices or location quality, where the information is related to being in Congress, as opposed to general sophistication; (iii) resource allocation or political influence: Congress members may divert government resources to increase the value of areas where they own real estate; or (iv) bribery: Congress members may receive transfers under the guise of higher capital appreciation.

To investigate the investor sophistication and superior information channels, we compare Congress members' returns during and after their tenure. If Congress members earn high returns because of their ability to analyze the market and select undervalued properties, their outperformance should not depend on whether they were in Congress or not. The fact that they only earned significantly higher returns while in Congress suggests that the time in Congress, rather than investor sophistication, drives the excess return. Second, we compare Congress members' returns to those of other investors who may be financially sophisticated, such as investment advisors and medical doctors.

Financial professionals earned approximately one fourth the excess return of Congress members, while doctors earned zero excess return, indicating that Congress members outperform even relative to high-skilled and sophisticated investors.

To further check the presence of a possible superior information channel, we investigate the market timing ability of Congress members. To this purpose, we construct a "buy-minus-sell" index of Congress member transactions each quarter. The index constructed from transactions occurring while in Congress positively and significantly forecasts national House Price Index returns at horizons between 1 to 12 quarters. However, the index constructed from transactions before being elected or after leaving Congress negatively and significantly forecasts housing returns. These tests all suggest that the time in Congress provides useful information for Congress member transactions. The predictive power of the index of transactions while in Congress is in stark contrast to Cheng, Raina, and Xiong (2014), who build a similar index for financial professionals and find no predictability.

To check the political influence channel we investigate whether government resources are more likely to be directed to locations where Congress members own real estate. We find that the growth of intergovernmental transfers from the Federal government is significantly higher in counties where Congress members own properties, although the dollar amounts are relatively small. This result suggests that Congress members in our sample either direct government funds to places where they own properties or make use of superior knowledge about such transfers.

Finally, we explore the bribery channel by investigating two ways in which explicit side payments can inflate capital appreciation. First, we test whether Congress members pay less (receive more) per square foot when they buy (sell), relative to their neighbors. We do not find statistically significant evidence that they do. Second, we test whether the counterparties of Congress members earn systematically lower returns. On average, their counterparties do earn negative excess returns, but the difference is not statistically significant. Based on these tests, we conclude that there is no systematic evidence that bribery could rationalize the superior performance of Congress members.

Our paper is broadly related to the large literature that studies the returns to individual real

estate investors.[4] More specifically, our paper is closest to Cheng, Raina, and Xiong (2014) and Goldsmith-Pinkham and Shue (2020). Cheng, Raina, and Xiong (2014) study the real estate investments of financial industry professionals around the time of the U.S. financial crisis. They use a buy-sell index to document a generally mediocre performance of financial professionals. Using a similar methodology applied to Congress members' real estate transactions we find instead that, unlike financial industry professionals, the Congress members' index significantly predicts future housing returns. The limitation of a buy-sell index is that it only allows us to detect market timing, but not other sources of excess returns, such as bribes or location picking. For this reason, we focus mainly on returns computed from repeated sales in our analysis. Like us, Goldsmith-Pinkham and Shue (2020) compute repeated sales returns from transaction data. They show that men earn an annual return 1.5% higher than women, and attribute nearly half of the return differential to gender differences in location and timing. Using a similar methodology, O'Connor, Norwood, Kim, and Shen (2018) find that female homebuyers pay an average 2% premium relative to males. We find larger effects—Congress members earn an unconditional return of 3.24% per year in excess of the return of average homeowners. An interesting difference between our findings and those in Goldsmith-Pinkham and Shue (2020) is that while the outperformance by men seems to be concentrated at the property level, most of Congress members' outperformance comes from national or MSA level market timing.

Our paper is also part of the literature studying the trading behavior and wealth of politicians. Within the U.S., this literature has focused on Congress members' equity trading and has led to a considerable debate that prompted regulatory reform. While there is some disagreement among academics, there appears to be little evidence of outperformance by Congress members' equity portfolios. Using Congress members' annual financial disclosures, Schweizer (2011), provides anecdotal evidence of profitable stock trades of politicians. Ziobrowski, Cheng, Boyd, and Ziobrowski (2004) and Ziobrowski, Cheng, Boyd, and Ziobrowski (2011) document more formally that politicians outperform the market systematically and conclude that they exploit their political position

[4] See, e.g., Flavin and Yamashita (2002); Chinco and Mayer (2015); Giacoletti and Westrupp (2017); Wong, Deng, and Chau (2018); D'Lima and Schultz (2020); Bayer, Geissler, Mangum, and Roberts (2020); Cvijanović and Spaenjers (2020); Bracke (2021).

to achieve private gains. However, these findings are questioned by Eggers and Hainmueller (2013) who, using the same data, show that any outperformance is limited to a small number of Senators. Furthermore, extending the analysis of Ziobrowski, Cheng, Boyd, and Ziobrowski (2004) they also find that in the five years between 2004 and 2008, Congressional portfolios do not show evidence of abnormal outperformance or unusual trading acumen of politicians. Eggers and Hainmueller (2014) further refine their findings and document a heavy skew in the stock holdings of members of Congress toward firms in their home districts. These studies provided the academic background for the Stop Trading on Congressional Knowledge (STOCK) Act that became law on April 4, 2012. The Act makes the use of political information for stock trading illegal and subjects members of Congress to insider trading rules. Several more recent papers found limited outperformance prior to the STOCK Act of 2012, and none after.[5] Our results are in stark contrast to this body of work in that we show that U.S. Congress members earn superior returns when investing in real estate.

Outside of the recent U.S. experience, there is more prevalent evidence of abnormal wealth accumulation by politicians. Comparing politicians who narrowly won or lost, Eggers and Hainmueller (2011) show that in the U.K., becoming a Conservative (but not Labor) Member of Parliament leads to a near doubling of wealth through one's lifetime. Fisman, Schulz, and Vig (2014) and Bhavnani (2012) perform a similar exercise in India and show that winning an election is associated with 4% faster wealth growth. Finally, Querubin and Snyder (2013a) show that narrowly winning a U.S. Congressional seat in 1860–1870 increased one's wealth by 40% compared to losing, however there was no difference between winners and losers in the subsequent 20 year period. Lenz and Lim (2009) find little evidence that House representatives accumulate wealth faster than similar non-representatives during 1995–2005. Carr (2017) finds Congress members on average earn abnormal returns to their wealth of 6.68% per year during 2004–2012. Our paper shows that one source of fast wealth accumulation is real estate investments.

Finally, our paper contributes to the large literature that studies the connections between politicians and firms. The political economy literature that explores the mechanism underlying corruption and crony capitalism shows that both politicians and firms benefit financially from

[5]See, e.g., Cherry, Heitz, and Jens (2018); Huang and Xuan (2018); Karadas (2018); Belmont, Sacerdote, and Van Hoek (2020).

exchange relationships. Firms might benefit from political connections through higher stock market valuations, earnings, bailouts, or better access to procurement contracts.[6] Politicians might benefit financially from ties to firms through bribes, political donations, increased hiring or lending in election years, or post-office rewards such as directorships on corporate boards.[7]

The rest of the paper proceeds as follows. Section 2 describes the data. Section 3 describes the empirical methodology and presents our main results concerning Congress members' real estate returns. Section 4 discusses the channels of Congress members' outperformance. Section 5 concludes. Appendix A describes the construction of our database of Congress members' real estate transactions and Appendix B contains details of additional results that we only summarize in the main text.

2 Data and Measurement

We construct a novel dataset of U.S. Congress members' real estate transactions by combining two separate data sources: (i) annual information from financial disclosures, publicly available from the Center of Responsible Politics (*OpenSecrets*), a nonpartisan and independent research group with the mission of "tracking money in U.S. politics and its effect on elections and public policy";[8] and (ii) information on individual real estate transactions available provided by the Zillow's Transaction and Assessment Database (ZTRAX).[9] These data allow us to obtain prices and compute returns for real estate transactions of Congress members and compare them to those of average homeowners.

[6] See, e.g., Roberts (1990); Fisman (2001); Ansolabehere, Snyder, and Ueda (2004); Khwaja and Mian (2005a); Faccio (2006); Jayachandran (2006); Goldman, Rocholl, and So (2008); Ferguson and Voth (2008); Benmelech and Moskowitz (2010); Bertrand, Kramarz, Schoar, and Thesmar (2018); Claessens, Feijen, and Laeven (2008); Cohen, Coval, and Malloy (2011); Cohen, Diether, and Malloy (2013); Cole (2009); Cooper, Gulen, and Ovtchinnikov (2010); Correia (2014); Desai and Olofsgard (2011); Dinc (2005); Duchin and Sosyura (2012); Faccio, Masulis, and McConnell (2006); Faccio and Parsley (2009); Goldman, Rocholl, and So (2013); Johnson and Mitton (2003); Khwaja and Mian (2005b); Leuz and Oberholzer-Gee (2006); Sapienza (2004); Stratmann (1995); Tahoun (2014); Tahoun and van Lent (2018).

[7] See, e.g., Shleifer and Vishny (1993), Haber (2002), Kang (2002), Diermeier, Keane, and Merlo (2005); Dal Bó, Dal Bó, and Di Tella (2006); Eggers and Hainmueller (2009); Lenz and Lim (2009); Querubin and Snyder (2013b), Thiessen and Schweizer (2011). In a recent study, Chen and Kung (2019) provide evidence that Chinese firms connected to members of the Politburo ("princeling firms") obtain price discounts on land purchases ranging from 55% to 60% and, in return, provincial officials who provide such discounts are 22% more likely to be promoted to position of national leadership.

[8] https://www.opensecrets.org/about/

[9] https://www.zillow.com/research/ztrax/

In the next two sections, we briefly discuss the two data sources. We provide further details in Appendix A.

2.1 U.S. Congress members' financial disclosure reports

Congress members are required to file Financial Disclosure Reports by the Ethics in Government Act of 1978. The reports are filed each year, and contain a summary of all of the Congress members' assets as well as financial transactions. The Center for Responsible Politics makes the reports available online, going back to the mid-1990s.[10] Figure 2 illustrates an excerpt from such a report.

We collect 15,185 reports for 1,251 Congress members who served in the 105th–116th Congresses. We read through 12,225 documents (including amendments), for 1,016 Congress members from 37 states, and identify up to 4,931 unique real estate assets out of which 2,242 properties with full address information. Appendix A.1 provides further details of the procedure we follow to identify U.S. Congress members real estate assets from their financial disclosure reports.

2.2 Real estate transaction data

The Zillow transaction data has a history of property transactions dating back to the early 1990s, as well as detailed home characteristics from more than 374 million public records across over 2,750 counties. Zillow gathers this information from publicly available sources such as deed transfers, mortgages, foreclosures, auctions, and property delinquencies. This dataset contains information about properties (e.g., location, size, etc.) and transactions (e.g., date, names of buyer and seller, etc.). Some states do not require transaction prices to be publicly disclosed and, as a result, the vast majority of transactions in these states are missing in the dataset. For this reason, we exclude these states from our analysis.[11]

[10] These reports are available at https://www.opensecrets.org/personal-finances/.

[11] We exclude the following states that do not have mandatory disclosure: Alaska, Idaho, Indiana, Kansas, Maine, Mississippi, Montana, New Mexico, Texas, Utah, and Wyoming. We also exclude Maine and South Dakota because, even though they are mandatory disclosure states, a very small fraction of their transactions have prices. In contrast, we do not exclude Louisiana, even though it is not a mandatory disclosure state, because a large fraction of transactions in Louisiana have prices.

2.3 Congress members' real estate transactions

To construct the final database of U.S. Congress members' real estate transactions we proceed in three steps. First, we search the Zillow database for transactions reported by Congress members in their financial disclosures. Second, we build an algorithm to search ZTRAX for any potential transactions made by the Congress member (not just declared transactions), using the declared transactions to better target our search. Third, we manually check those transactions found by the algorithm and keep only those that we can confidently attribute to a Congress member. Appendix A.2 contains a detailed description of the procedure we follow to construct our database.

2.4 Summary statistics

Table I shows the location distribution of our sample of properties. Congress members tend to buy locally: 36.9% of their properties are in their Congressional district, and 81.6% are in their state. An additional 8.9% is in D.C., with the remaining 9.5% out-of-state excluding D.C. Congress members also tend to buy in urban areas: 84.0% of Congress properties are located in 2000 census urban areas, which is 3.2% higher than the fraction of properties located in urban area in the control data set of all homeowners. Table II presents summary statistics of our sample of real estate transactions. The median property in our data costs $183,000. Congress members buy significantly more expensive properties, with a median price around $276,500. Governors buy even more expensive houses, with median transaction price of $511,117. On average, the transaction prices of Congress member properties are 2.62 times the median transaction price of properties in the same zip code, 2.78 times the median transaction price of properties in the same county and 2.95 times the median transaction price of properties in the same state. Not surprisingly, medical doctors and investment advisors also buy expensive properties, although less expensive than Congress members. Properties bought by Congress members also tend to be older and larger, although the median number of bedrooms and lot size are similar. Congress members tend to hold on to their properties for almost one year longer, 6.42 compared to 5.76 years for average home owners. Congress members also hold more liquid properties: their average property has 1.63 two-way transactions, compared to 1.44 in the control dataset of all homeowners.

Compared to average homeowners, Congress members are far more likely to use a holding company to buy property: approximately 30% of Congress members' transactions involve a holding company compared to just 8% of average homeowners' transactions.

2.5 Returns on real estate transactions

The main performance measure for our analysis is the return to real estate ownership. We refer to a *two-way transaction* as to a buy and subsequent sale of a real estate property. A two-way transaction i is then characterized by a buy time, $t_{i,b}$ and a sell time $t_{i,s}$ of a real estate property. We define the gross annualized return on a two-way transaction i as

$$R_i = \left(\frac{P_{t_{i,s}}}{P_{t_{i,b}}} \right)^{1/\tau_i}, \tag{1}$$

where $P_{t_{i,b}}$ and $P_{t_{i,s}}$ denote the buy and sell price in transaction i, and $\tau_i = t_{i,s} - t_{i,b}$ denotes the holding period in years. We denote by r_i the log return of transaction i, i.e., $r_i = \log R_i$.

To identify two-way transactions in our data, we require that the name of the buyer matches that of the seller on the subsequent transaction and exclude non-arm's length transactions.[12] Appendix A.3 contains a detailed description of the procedure we follow to construct two-way transactions from the Zillow dataset. This procedure leaves us with 821 two-way and 6,734 one-way Congress member transactions in our data. Analogously, in the control sample of average homeowners we identify 32,795,858 two-way transactions. In the control sample of homeowner transactions, we consider each two-way transaction as two separate one-way transactions. Therefore, the number of one-way transactions in the control sample is twice the number of two-way transactions, that is, 65,591,716.

An alternative way to compute the returns in equation (1) would be to also use data from properties with only a single transaction and impute the missing price using a model. For example,

[12] We exclude transactions that are labeled as "internal" by Zillow, where the name of the buyer is the same as that of the seller on the same transaction, and where the holding period is shorter than 10 days. Non-arm's length or internal transactions are common in the data. For example, these transactions include those in which the owner adds their spouse's name to a deed, or transfers (part of) the property to family members, a trust, or business under the owner's control.

this could be achieved by a hedonic pricing model based on the characteristics of a property, such as its neighborhood and other attributes, to predict property valuations. Our preferred approach is to use realized returns. Even though this leads to fewer observations, these are grounded in market transactions and not functions of a researcher's valuation model.

A limitation of computing returns from deeds records as described above is the lack information on rental income and maintenance or construction costs. Therefore, the returns we compute are just capital gains, which are an incomplete measure of total returns to real estate. All returns in the sample—whether owned by members of Congress or not—are subject to the same lack of information. Therefore if dividend yields and maintenance costs follow similar distributions across Congress members and the control group of all homeowners, then a comparison of Congress member returns from equation (1) to the control group would reflect a difference in total returns.

Another well-known problem when working with individual real estate transactions is that in some cases returns have extreme values, due to data errors in the deeds records. For example, the highest annualized return in our data is a (non-Congress member) property bought for \$1,000 and sold 10 days later for \$2,895,000, implying an annualized return of $1.98 \times 10^{123}\%$. Including such extreme returns would introduce bias in estimating mean returns and thus affect our analysis. To address this problem, we follow the same eligibility criteria used in the construction of the S&P CoreLogic Case-Shiller Home Price Indices (see appendix A.4 for details).[13] After imposing these restrictions, the number of two-way transactions reduces from 821 to 640 (Table II). Most of our analysis is based on these transactions. We also consider value-weighted returns as a way to deal with outliers. For robustness, in Section 3.5 we explore properties of the excluded transactions.

3 Empirical Results

This section describes our regression methodology and presents our main result measuring the performance of real estate transactions of U.S. Congress members, relative to several benchmarks.

[13] For the Congress member and control samples, we exclude transactions with: (i) very short holding periods, (ii) extremely high or low holding period returns, (iii) extremely low transaction prices, and (iv) construction activity.

3.1 Estimation Approach

Our main econometric specification consists of regressing the real estate returns from all the two-way transactions in our sample on (i) a dummy variable equal to one if the transaction is associated to a U.S. Congress member and zero otherwise; and (ii) a set of control variables.

Specifically, we estimate the model

$$r_i = \beta \, \mathbf{1}_{\{i \in \mathcal{C}\}} + \gamma_T' \, T_i + \gamma_S' \, S_i + \gamma_{TS}' \, T_i \times S_i + \epsilon_i, \tag{2}$$

where r_i is the annual log return on transaction i obtained by annualizing the holding period return; $\mathbf{1}_{\{i \in \mathcal{C}\}}$ is a dummy variable which is equal to 1 if a two-way transaction i belongs to the set $\mathcal{C}$ of real estate transactions attributed to a Congress member, that is, the purchase and sale of transaction i are attributed to the same Congress member; T_i is a vector of year fixed effects of length equal to the number of years in our sample;[14] and S_i is a set of state fixed effects for all states included in our sample which equals one if the property transacted is in the state and zero otherwise. The coefficient of interest is β.

3.1.1 Subsample analysis

To check whether excess returns are linked to being in Congress, we also estimate regression (2) separately for transactions that (i) end before a Congress member joins Congress ("pre"); (ii) start and end while the member is in Congress ("during"); and, (iii) start after the member leaves Congress ("post").

An alternative way to analyze returns while in versus out of Congress is to replace in regression (2) the dummy variable $\mathbf{1}_{\{i \in \mathcal{C}\}}$, which is equal to one if the transaction involves a Congress member, by a continuous variable $\Delta_i = \frac{\hat{\tau}_i}{\tau_i}$. Here, $\frac{\hat{\tau}_i}{\tau_i}$ represents the fraction of the holding period τ_i for transaction i that overlaps with years in congress $\hat{\tau}_i$. Specifically, $\hat{\tau}_i/\tau_i = 1$ for all "during" transactions; $\hat{\tau}_i/\tau_i = 0$ for all "pre" and "post" transactions; and $\hat{\tau}_i/\tau_i \in (0, 1)$ for all other transac-

[14] Specifically, the year fixed effect is set to one for all years between the buy and the sell dates, and zero in all other years. Appendix A.5 contains a detailed description of the time fixed effects used in our analysis.

tions. In this case, the estimate of coefficient γ in regression (2) measures the annual contribution to excess return, under the assumption that each year in Congress contributes equally to returns. In the tables we discuss in the next section, these results appear in the columns labeled as "% years in Congress."

3.1.2 Location picking

To investigate whether Congress members have a particular skill in picking the location of their real estate transactions we proceed as follows. For each Congress member transaction, we find all other transactions for properties within a distance d of the Congress member's property. Formally, letting $\mathcal{I}$ be the set of all two-way transactions in the ZTRAX database and $\mathcal{C} \subset \mathcal{I}$ the set of transactions involving a Congress member, we define $\mathcal{N}(c,d) = \{i \in \mathcal{I} \,|\, \rho(c,i) \leq d, \text{ for all } c \in \mathcal{C}\}$ as the set of transactions within a radius $\rho(c,i) \leq d$ from the transaction c of a Congress member. For each Congress member transaction $c \in \mathcal{C}$ we estimate our baseline regressions in equation (2) for all transactions $i \in \mathcal{N}(c,d)$. As in the baseline regression, the coefficient β captures the outperformance of a Congress member's transaction c relative to those within a radius d. For each of several choices of the radius d, we compute the average coefficient β across all Congress member transactions c and its Fama and MacBeth (1973) t-statistic.[15,16]

3.2 Aggregate return predictability

Before analyzing the individual returns of Congress members, we test whether their actions in aggregate are consistent with informed trading. To do so, we construct a buy-sell index of Congress

[15] An alternative approach to investigate location picking ability, is to use all the data and estimate the regression in equation (2) with time×zip code fixed effects, instead of time×State fixed effect. We do not pursue this approach for two reasons. First, using time×zip code fixed effects would result in a large number of fixed effects with zero or few transactions, which is not ideal for estimation. Second, our procedure allows us to compare Congress members' returns to returns of any geography around Congress members' properties, not just the zip code.

[16] Yet another alternative approach to investigate location picking ability is to simply compute Congress members' excess returns by comparing them to a return on an existing index, such as the Case-Shiller city house price indices or the U.S. Federal Housing Finance agency's state house price indices. Doing so would however inflate the excess returns of Congress members and provide misleading conclusions. This is because house price indices are value weighted, whereas, as discussed above, individual returns are biased upward due to data errors. As a result, comparing the equal-weighted average of any large set of housing transactions, including transactions in the control group, to these indices would lead one to conclude that there is superior performance within this set. For robustness, we examine Congress members' value-weighted returns in Section 3.3.

member transactions that occur while in Congress, and separately, for transactions that occur while out of Congress. We test the predictability of each of these indices for national housing returns, as well as state level returns. This analysis is similar to Cheng, Raina, and Xiong (2014), who build a similar index for financial professionals.

Specifically, we use one-way Congress member transactions between 1994 and 2017, and exclude those that (i) we identify as affected by construction,[17] (ii) appear to be non-arm's length based on buyer and seller names or known relationships, (iii) have a buy or sell price below $10,000. This leaves 1,618 buy and 999 sell transactions that happen during Congress years, and an additional 1,701 buy and 1,120 sell transactions that happen outside of Congress years.

Each quarter, we define the variable $BMS_t = \frac{B_t - S_t}{B_t + S_t}$ as the total number of Congress members' purchases in that quarter, minus the total number of Congress members' sales in that quarter, scaled by the total number of transactions in that quarter.[18] We do this for transactions that happen while in Congress, and, separately, for transactions that happen while out of Congress. We then regress the U.S. Housing Price Index return[19] at various horizons on BMS_t.

We report the results in panel A of Table IV, where we distinguish between "In Congress" and "Out of Congress" transactions. At horizons between 1 and 12 quarters, the index of transactions while in Congress positively and significantly forecasts national housing returns, though the predictability weakens with horizon. Thus, Congress members tend to buy when it is a good time to buy, and sell when it is a good time to sell. Our BMS_t index is based on completed transaction dates. Because there is usually a significant lag between the decision to buy and the transaction's completion, the true predictability horizon may be longer than suggested by this regression. As shown in the "Out of Congress" columns of Panel A, transactions while out of Congress show the opposite pattern, with the index negatively and significantly forecasting housing returns.

We repeat this exercise at the state level, in which we replace BMS_t by an analogously constructed index, BMS_t^i for each state i, and estimate pooled regressions. Because some less populous

[17] Transactions are identified as affected by construction if the buyer or seller name is on a list of large construction firms, or contains the words "Constr", "Home", "Develop", or "Build", or the construction date (when available) is during the holding period.

[18] Results are similar if we define $BMS_t = B_t - S_t$ instead.

[19] Federal Reserve Economic Data series USSTHPI.

states have few transactions per quarter, we construct the state level BMS_t^i as an average over the previous four quarters, rather than just one quarter as we do for the national buy-sell index, BMS_t. Panel B of Table IV shows the results of a univariate pooled regression. As with national-level returns in Panel A, the state-level index BMS_t^i forecasts state returns, though the R^2 is much lower because there is much more variability in state level returns. However, most of the forecastability is due to the correlation of state returns with the national return. In Panel C, we include the national return (at exactly the same horizon as the state return) as an additional control. The slopes on BMS_t^i for during-Congress transactions remain positive but only the 1-quarter slope is statistically significant. The BMS_t^i constructed from out-of-Congress transactions negatively and insignificantly forecasts housing returns.

3.3 Excess returns from individual real estate transactions

Table V contains our main results. Each entry represents the annual return from real estate transactions of U.S. Congress members in excess of the return in the control group of all homeowners' real estate transactions. Different rows and columns represent different Congress member subgroups and different controls.

The first column contains all Congress members' returns, including assets bought or sold while not in Congress. In the third, fourth, and fifth columns, we split the Congress member returns into those that were sold before joining Congress ("Pre-Congress"), those that were bought and sold while in Congress ("During Congress"), and those that were bought after leaving Congress ("Post-Congress"). This classification excludes returns on assets whose holding period partially overlaps with time in Congress. In the second column, labeled "% years in Congress," we replace the Congress dummy by the fraction of the holding period while in Congress, as discussed in Section 3.1.1. If each year in Congress adds a constant amount of excess return, then transactions that overlap with time in Congress will be just as useful to identify this constant effect as the "During Congress" transactions.[20]

[20]To see this, suppose that assets A and B were both held for two years, with both years in Congress for A and only one of the two years in Congress for B. Suppose each year in Congress adds r_c to the excess return. Then A's average excess return should be r_c and B's should be $0.5r_c$. Our specification regresses $y = [r_c, 0.5r_c]'$ on $x = [1.0, 0.5]'$, with

Our main finding is that Congress members earn significant excess returns on transactions that occur while they are in Congress, and do not earn excess returns on transactions that occur once they leave Congress. Panel A shows that the median annualized excess return is 3.72% "During" Congress, with a p-value of less than 1%; it is 0.17% "Post" Congress. Panel B shows that the value weighted annualized excess return is 3.31% "During" Congress, with a p-value of 1.7%; it is −2.44% "Post" Congress. In both of these cases, the p-values are computed by bootstrapping a random sample of non-Congress member transactions of the same size as the actual sample.

We acknowledge that the results in the "Pre-Congress" column might be subject to look-ahead-bias and that reverse causality might affect their interpretation. To appear in our data set of Congress member transactions, an individual must first be elected to Congress. Because getting elected to Congress often requires significant personal wealth, a high return on personal investments makes one more likely to be elected. This bias may affect the "All" column, which includes "Pre-Congress" transactions. It may also affect the "% years in Congress" column, albeit likely less so, to the extent that some assets were bought prior to joining Congress.[21] Despite these reverse causality concerns, for completeness, we report these results. The focus of our analysis is however on the "During-Congress" and "Post-Congress" returns.

Panels C–E of Table V report estimates of the coefficient β from the regression model in equation (2). Since estimating this regression is analogous to computing equal-weighted differences of means, the coefficient estimates from Panels C–E are not directly comparable to the median and value-weighted return spreads reported, respectively, in Panels A and B. In Panel C, we estimate the regression from equation (2) with no fixed effects—this is equivalent to a simple difference of means. Across all locations and time periods in our data, Congress members earn average annualized excess returns of 3.24% "During" Congress, with a t-statistic of 4.26; they earn −0.18% "Post" Congress. Since the median property bought by Congress members is worth about $276,500 and is

both data points identifying the slope as r_c.

[21]The reverse causality may be less severe for the holding period return-adjustment procedure discussed in Section 3.1.1 for two reasons. First, since such gains were not realized until after joining Congress, the Congress member could not have used realized gains from this transaction to help fund an election campaign. Second, although unrealized gains can improve one's financial situation (for example, by making it easier to take out a home equity loan), in dollar terms, the unrealized gains would likely only be large for transactions held for a long time prior to joining Congress. However, such transactions would receive a low weight in the "Fraction of Years" procedure, since most of the holding period would be outside of the Congress years.

held for about 5.5 years, this translates into $53,003 excess gains per median property bought and sold during Congress. For the same set of properties, the mean dollar excess gain is $108,956.[22]

We next investigate the source of these excess returns. In Panel D, we estimate the same regression but include year fixed effects. As discussed in Appendix A.5, the fixed effects represent a return on a national housing index estimated from all transactions, thus this specification controls for national level market timing. The annualized excess return "During" Congress falls to 2.17% but remains significant, with a t-statistic of 3.11; it is an insignificant 1.33% "Post" Congress. This implies that approximately 30% of the total out-performance can be attributed to national level market timing by Congress members.

In Panel E, we estimate the same regression but include year fixed effects interacted with state fixed effects. This specification controls for market timing at the state level. The annualized excess return "During" Congress falls to 0.99% with a t-statistic of 1.43; it is 0.29% "Post" Congress. Thus, approximately an additional 30% of the total out-performance can be attributed to a mix of market timing and state level location picking by Congress members.

The results are largely similar if we focus on the specification in the "% years in Congress" column, which accounts for the fraction of a transaction holding period that overlaps with time in Congress. The point estimates are slightly smaller, however the t-statistics are as large as, or larger than, the "During" column because there are more than twice as many observations. With this specification, the unconditional annualized excess return is 1.94%, and falls to 0.76% when controlling for market timing and state level location picking.

3.4 Local excess returns

Table VI investigates the role of "location picking" at different geographies as a potential source of U.S. Congress members' returns. As discussed in Section 3.1.2, for each choice of distance d, we use only the transactions within a distance d of the Congress member's property to determine

[22] We compute the excess gain as $P_{t+s} - P_t(1+r_b)^s$ where P_t is the purchase price, P_{t+s} is the sell price, r_b is the benchmark return, computed as the difference between the Congress members' annualized return $r = \left(\frac{P_{t+s}}{P_t}\right)^{1/s}$ and the average annualized Congress members' excess return of 3.24%, that is $r_b = r - 0.0324$.

the Congress member's abnormal return. Within each set of transactions, we still control for time fixed effects. Thus, as we move down the table, we are controlling for more local components of returns and any time trends within the specified geography.

The $d = \infty$ uses all transactions, and is therefore comparable to Panel D of Table V, indeed the point estimates are nearly identical. The second row has a radius of 100 miles, which covers 31,400 square miles. Since the average continental U.S. state has an area of 65,000 square miles, the second row is roughly comparable to Panel E of Table V and the results are similar. The subsequent rows reduce the distance gradually, down to 0.5 miles.

The point estimates of excess returns on "During" Congress transactions fall as distance falls, suggesting that Congress members are choosing better than average locations and times to invest. The annualized excess return falls to around 0.7% at a 10-mile radius, and stays approximately constant after this. The t-statistics are significant until a 50-mile radius, and insignificant below. A 10-mile radius is roughly the size of a small MSA or a large neighborhood in a larger MSA. Thus, Congress members appear to have location picking ability down to the city or neighborhood level. In total, about 1/3 of their outperformance can be explained by national level market timing, and another 1/2 by the ability to choose the right cities or neighborhoods at the right time.

The remaining 1/6 of the outperformance, or equivalently 0.7% per year excess return is not statistically significant, although the point estimates do not vanish, even at a 0.5-mile radius. In Section 4.4 we investigate possible sources of excess returns at this hyper-local level.

3.5 Analysis of excluded returns

One concern with the above findings is that the procedure we used to exclude extreme transactions, discussed in Section 3.5, may be "throwing the baby out with the bath water": if, say, extreme returns were the consequence of misconduct, excluding these transactions would affect the interpretation of our results. In this section, we investigate this issue by analyzing returns of excluded transactions.

Table VII shows summary statistics for the excluded and included arm's length (non-internal)

transactions. We separate the data into returns excluded because they are linked to construction, 'Construction', returns excluded for other reasons (for example too short a holding period or too high a return), 'Other', and returns included. In total, in the control set of all transactions, we exclude 6% of returns due to construction, and another 18.5% for other reasons; these numbers are comparable to the number of transactions excluded in the calculation of the S&P/Case-Shiller house price index. In the Congress member set, we exclude 7.2% of returns due to construction, and another 14.9% for other reasons.

The returns of transactions linked to construction are extremely high. This is not surprising since constructions involve many costs that are not accounted for in our calculation of the holding period return (sale price divided by purchase price). These construction returns are higher for the control set. Since the control set is likely to contain different kinds of developers than the Congress member set (for example large U.S.-wide developers), and since there is significant heterogeneity in the types of construction or remodeling that can be done, we would expect significant heterogeneity in the magnitudes of the construction costs and the computed returns.

Among the returns excluded for non-construction reasons, the Congress member median is 83.1%, compared to 68.3% for the control set of all transactions. The Congress member 75th percentile is 316.2%, compared to 256% for the control. Thus, in addition to the high Congress member excess returns for non-excluded transactions that we document above, Congress members seem to earn high returns among the excluded set as well. On the other hand, both financial professionals and doctors have much lower medians and 75th percentiles in their excluded transactions.

In Table VIII we repeat our main analysis in Table V, but we only exclude construction. We report results only for median and value-weighted returns because outliers would generate very high values for equal-weighted returns. While the point estimates change, the basic result remains the same: while in Congress, Congress members earn high excess returns relative to average homeowners, and relative to former Congress members.

3.6 Primary residences vs. investment properties

The documented high returns of Congress members may depend on whether the transaction involves a primary residence or an investment property. If the presence of a Congress member in a neighborhood increases home values, then one would expect this effect to be stronger for primary residences than investment properties. Appendix B.1 contains a detailed description of our analysis and Table B.1 reports its results. For brevity, we only summarize the main findings. Investment properties make up approximately 60% of the two-way transactions and are responsible for the bulk of the excess returns. Across all locations and time periods, Congress members earn average annualized excess returns of 1.03% with a t-statistic of 2.11 on their primary residences, and 1.54% with a t-statistic of 2.51 on their investment properties. When controlling for market timing at the state level, Congress members earn statistically insignificant average annualized excess returns of -0.15% on their primary residences, and 1.31% with a t-statistic of 2.4 on their investment properties. Based on this analysis, we conclude that it is unlikely that the superior returns of Congress members are caused by their presence in a neighborhood.

3.7 Characteristics of Congress members and their properties

We further investigate whether characteristics of Congress members—such as party affiliation, education, wealth, or age—or of their properties—such as age, size, number of rooms—can explain the cross-sectional variation in Congress member returns. Appendix B.2 contains a detailed description of our analysis and Table B.2 reports the results. In sum, we do not find that any of these characteristics explain excess returns. The only statistically significant characteristic is holding period: shorter holding periods are associated with larger annualized returns.

4 Potential mechanisms

In this section, we explore several potential channels that can explain Congress members' outperformance in the housing market. First, we explore the "superior information" channel, according to which Congress members' outperformance may emerge if they are more likely than average home-

owners to receive superior information about future house prices and location quality. Second, we analyze the possibility of an "investor sophistication" channel, according to which outperformance is a consequence of Congress members being either better investors, real estate developers, or bargainers. Third, we investigate the "political influence" channel, according to which Congress members may be able to exploit their influence by allocating resources of the government or special interest groups to increase the value of areas where they own real estate. Finally, we explore the "bribery" channel according to which outperformance is the consequence of systematic misconduct, such as side-payments for political favors.

4.1 Superior information

In Section 3.2, Table IV, we show that a buy-sell index of Congress members' transactions that happen while in Congress positively predicts national housing returns. On the other hand, a buy-sell index of Congress members' transactions that happen either before they join, or after they leave Congress negatively predicts national housing returns. These results suggest the possibility that serving in Congress provides its members with information that can be of value in the timing of their real estate investments.

Another way to investigate superior information is to test whether Congress members who likely have access to superior information perform better. Appendix B.3 compares the performance of Congress members who serve on powerful committees to that of other Congress members. We find weak evidence that the outperformance of Congress members improves during the time Congress members serve on a powerful committee.

4.2 Financial sophistication

One possible reason for high returns by Congress members is that they are simply more sophisticated investors than average homeowners. They are better able to analyze the markets, forecast market trends, and select undervalued properties. The difference between "During" and "Post" is suggestive that time in Congress, rather than investor sophistication, is driving the excess return. Nevertheless, it is useful to compare Congress members' returns to those of other investors who

may be financially sophisticated.

For this analysis, we take our main control group to be the set of all two-way transactions of all homeowners. As an alternative control group, we collect the names of investment advisers[23] and of doctors.[24] From these investment advisor and doctor names, we select only the most unique names and identify ZTRAX two-way transactions involving those names in their home states.[25] Although limiting our control groups to individuals with unique names reduces the representativeness of the sample, it allows us to confidently identify transactions that indeed belong to the intended control group. We do not expect our sample to differ significantly from a representative sample of investment advisors and doctors in terms of financial sophistication or investment performance. We hence believe that our conservative approach provides us with a valid alternative control sample.

These results are reported in the columns labeled "Inv. Adv." and "MDs" of Table V. Financial professionals do appear to earn significantly positive returns, but the magnitude is only about one fourth that of Congress members. Doctors earn negative but statistically insignificant returns. We conclude that if the high Congress member returns are due to sophistication or skill, it is not a broad skill that is common to other educated people.

4.3 Resource allocation

Political influence is a plausible channel through which Congress members may enrich themselves through real estate transactions. A specific way in which such a channel can manifest itself is through lawmakers' exercise of control over federal or state resource allocation. Specifically, we study the relationship between the housing location choices of Congress members and (i) intergovernmental transfers from the federal government (Section 4.3.1), and (ii) the creation of Opportu-

[23] The data comes from SEC Investment Adviser Public Disclosure (https://adviserinfo.sec.gov/).

[24] The data comes from Florida (https://www.flhealthsource.gov/data-portal) and Ohio medical boards (https://elicense.ohio.gov/oh_verifylicense). We were not able to find easily accessible lists of doctors for other states.

[25] We define a name as unique if the national name frequency is lower than 20. The national name frequency is calculated as $\frac{\sum_{t=1940}^{1990} C_{i,t}^{First}}{\sum_i \sum_{t=1940}^{1990} C_{i,t}^{First}} \times \frac{C_j^{Last}}{\sum_j C_j^{Last}} \times N_{2010}$, where the first name frequency is calculated using baby first name count data, $C_{i,t}^{First}$, from https://www.ssa.gov/oact/babynames/decades/century.html; the last name frequency is calculated using last names that occur more than 100 times in 2010 census data, $C_j^{Last} > 100$, from https://www.census.gov/topics/population/genealogy/data/2010_surnames.html; and N_{2010} is the total population in U.S. in 2010.

nity Zones (Section 4.3.2). We find evidence that counties with a higher concentration of properties owned by Congress members see higher future growth rates in federal transfers. However, we do not find evidence that a higher concentration of properties owned by Congress members increases the likelihood that a census tract receives an Opportunity Zone designation.

4.3.1 Inter governmental revenues and expenses

In this section, we show that a county with more Congress members' properties is more likely to experience a higher growth of transfers from the Federal government.

We construct a panel data of Congress member property holdings that includes the number of properties held by active Congress members in each county over our 1994–2017 sample period. We focus our analysis on 1-way transaction data. A property is counted as belonging to a Congress member in county i at time t if (i) there is a buy transaction by a Congress member in county i prior to t, and there is no sell transaction for this property or the sell transaction happens after t; or (ii) there is a sell transaction by a Congress member in county i after t, and there is no buy transaction for this property or the buy transaction happens before t.

Following Adelino, Cunha, and Ferreira (2017), we obtain local government spending data from the U.S. Census Bureau's Annual Survey of State and Local Government Finances. The data include revenues and expenditures of individual local government units within each county in the U.S. We focus on the intergovernmental revenues and expenses from/to the federal government.

In Table IX, we estimate the effect of Congress member property holdings on the future per capita growth rate of net intergovernmental transfers from the federal government (per capita IGR). We include county fixed effects and year fixed effects to account for unobservable time-invariant county characteristics and general time trends that may affect gross growth rates of intergovernmental transfers. We also control for time-varying county characteristics, such as the fraction of people over 65, unemployment rate, per capita income, population, and industry structure. We estimate the following regression

$$\frac{IGR_{t+k}}{IGR_t} = \beta \, \text{NumProp}_{i,t} + X_{i,t} + FEs + \epsilon_{i,t} \tag{3}$$

where i denotes county, t denotes year, and k takes the value of 1, 3 or 5 years. To alleviate the bias caused by outliers in intergovernmental transfer data, we winsorized the data at the 1% and 99% level.[26]

Panel A of Table IX shows the results obtained from estimating regression (3) across all counties. Increasing the number of Congress member properties in a county-year by one unit is associated with a 0.13% rise in the growth rates of federal net per-capita IGR in the following year, a 0.57% rise in the next 3 years, and a 0.88% rise in the next 5 years. All estimates are statistically significant at the 1% level, although the additional explanatory power (R^2) of the independent variable is quite small. Many counties are very sparsely populated, while most Congress member properties are located in high population counties. In Panel B, we repeat the exercise including only counties in the top population tercile.[27] The point estimates and significance are very similar to those in Panel A.

The estimates from Panel A imply that an additional Congress member's property in an average county is associated with $5,798 of additional net federal transfers in a year, $25,422 in three years, and $39,248 in five years. Focusing on counties in the top population tercile, which is the subsample responsible for positive relationship, these numbers increase to $11,941, $51,438, and $79,913.[28] Although these numbers appear small, if only one out of n Congress members is able to influence

[26] As stated in the Public Use Files Disclaimer of the Annual Survey of State and Local Government Finances, *"Because the Census Bureau has not reviewed the individual unit data as separate time series, caution must be exercised in their use and interpretation"*. There are large outliers in the 1-, 3-, and 5-year growth rates of intergovernmental transfer from the federal government. An example of such outliers is the intergovernmental revenue of Pulaski County, Arkansas. Pulaski is the most populous county in Arkansas. Its intergovernmental revenue from the Federal government in 2001, 2002 and 2003 are $4,324,000, $0 and $3,524,000 in the Individual Unit File. However, the audited financial statements of Pulaski County show that the intergovernmental revenue from the Federal government in 2001, 2002 and 2003 are $4,399,000, $4,575,000, $3,524,000 respectively. We think the IGR federal value in 2002 is a data error in the U.S. Census Bureau's survey data, which caused the gross growth rate in 2002 to be 0. Appendix B.4 provides details of the Annual Survey data and results of additional robustness tests. Table B.5 shows the estimation results when we exclude outliers in the top and bottom 1%. Table B.6 shows the estimation results when we use the percentile rankings of the growth rates of future federal intergovernmental transfers. All robustness tests results are consistent with the estimates in Table IX.

[27] The number of observations in Panel B is more than one third of Panel A because we break counties into terciles, and exclude county-years where data is unavailable. Data is far more likely to be unavailable for low population counties.

[28] An average county has $4,459,971 in net intergovernmental transfers from the federal government in a year. The median net growth rate is 0. Therefore, one additional Congress member property increases the net growth rate from 0 to 0.13% in a year for a median county (Table IX), implying an increase in net federal government dollar transfer of $0.13\% \times \$4,459,971 = \$5,798$. An average county in the top population tercile has $9,185,434 in net intergovernmental transfers from the federal government in a year.

the direction of Federal funds, then the effect conditional on a Congress member action would be n times greater.

In summary, these results provide suggestive evidence that Congress members may influence prices of the properties they own by directing government funds to places where these properties are located.

4.3.2 Opportunity zones

The Tax Cuts and Jobs Act of 2017 allowed for the creation of Opportunity Zones (OZs), with substantial tax benefits for investing in an OZ. Certain census tracts were designated as eligible to become an OZ based on low income and high poverty rate. Among eligible tracts, state governors had significant discretion in choosing which tracts would be designated as an OZ. If Congress members are able to influence governors' decisions, the presence of Congress member properties in a census tract may predict the designation of an area as an OZ. We estimate a linear probability model of an eligible census tract being designated as an OZ, where the predictors include measures of income and poverty, as well as the number of Congress member properties in a census tract. We do not find evidence that a Congress member's property holdings are influencing the governor's designation decisions. The slope on the number of Congress member properties in a census tract is positive, but not statistically significant. We report these results in Appendix B.4, Table B.7.

4.4 Bribery

Finally, we investigate whether the high returns of Congress members are due to systematic misconduct. For this purpose, we conduct two tests: One based on returns of counterparties in Congress members' transactions and one based on transaction property prices. If real estate is systematically being used to transfer bribes, then we would expect the excess returns on these transactions to be negative.[29] These returns would also be lower if Congress members are systematically better at

[29]For example, in November 2003, Representative Randy "Duke" Cunningham, a San Diego Congressman and member of the defense appropriations subcommittee, sold his house for $1,675,000. The buyer, 1523 New Hampshire Avenue LLC, sold it for $975,000 eight months later, during which time the San Diego house price index increased by 22.5%, implying an excess annual return of -67%. The owner of 1523 New Hampshire Avenue LLC was Mitchell Wade, who also owned the defense contracting firm MZM Inc. Over the same year, MZM Inc. received $41 million

capturing the value in a transaction, for example by being better negotiators.

To perform the first test, we investigate the returns of people who sell to Congress members, and the returns of people who buy from Congress members. We consider two-way transactions for Congress members' counterparties. This allows us to use the entire set of Congress members' transactions, not just Congress members's two-way transactions, as in the analysis of Section 3. In our sample we have a total of 6,734 one-way Congress member transactions. We exclude transactions that are not arm's length and transactions classified as construction. For each included Congress member transaction, we find the subsequent two-way transaction if the Congress member sold, and the previous two-way transaction, if the Congress member bought. For these two-way transactions we apply the same exclusion criteria used in Section 3.3. After applying these filters we are left with 1,100 returns of Congress members' counterparties.

Table X repeats the analysis of Table V on Congress members' counterparty returns. We separate the results into pre-, during-, and post-Congress. The median annualized return of people who transact with Congress members while they are in Congress is -0.64% and it is statistically insignificant. The value-weighted return is positive and insignificant while the equal-weighted return is negative and insignificant. Interestingly, the median return is larger, in absolute value, for transactions that take place after Congress and it does not vanish when adding controls. For example, even when controlling for Year$\times$State fixed effects, the average annualized equal weighted return for these counterparties is -1.19% with a t-statistic of -1.78.[30]

To perform the second test, we investigate whether Congress members pay too little for their properties, or sell them for too much relative to fair value. Our results for this test are inconclusive because we are unable to compute sufficiently reliable estimates of fair value.

As above, this analysis is done for all transactions, rather than just two-way transactions. To

in defense contracts, after receiving near zero in previous years. The incident was uncovered by the San Diego Union Tribune (Stern, 2005) and, eventually, Cunningham was sentenced to over eight years in prison.

[30]These negative returns for counter-parties for post-Congress transactions are not necessarily inconsistent with the low Congress member returns for post-Congress transactions in Section 3.3. First, in Section 3.3 we use Congress member two-way transactions only, whereas here we are using all Congress member transactions. Second, in Section 3.3 we exclude Congress member transactions that have extreme returns, whereas here we are not excluding such transactions. Indeed, in Section 3.5 we show that if we include the excluded transactions, then Congress members' median returns are high even post-Congress. Third, if investors are sufficiently bad at timing the market or choosing locations, their return may be low even if they receive a favorable price from the buyer or seller.

determine fair value, we run hedonic regressions of prices on year fixed effects, to account for variation in real estate valuations over time; zip code fixed effects, to account for variation in real estate valuations across space; and the dwelling's square feet. We then add dummies for Congress member transactions to test whether Congress members are buying or selling for significantly different prices than predicted by these hedonic regressions. These results are presented in Table XI.

We find that during and after Congress, Congress members both buy and sell properties for about 12% to 17% more than the values predicted by the hedonic regressions. This is consistent with them owning higher quality properties, whose value the hedonic regression is unable to estimate properly. We do not find that the premium they pay when they buy is significantly different from the premium that they receive when they sell.

Unfortunately, these hedonic regressions are imperfect valuation tools. While the overall R^2 is 0.75,[31] much of the explanatory power comes from across zip code variation. Within a zip code and year, only 43% of the price variation is explained by this regression. Adding property characteristics like lot size or number of bedrooms does not significantly improve the fit, but reduces the sample size. Therefore, this second test is inconclusive about the source of Congress members' outperformance.

5 Conclusion

Combining financial disclosure of U.S. Congress members since the early 1990s to real estate transaction data, we construct a novel comprehensive dataset of real estate transactions of members of Congress. We find that U.S. Congress members significantly outperform other real-estate investors. The outperformance is concentrated during the years they are in Congress, and is mostly explained by a combination of timing the market, and picking attractive broad areas (10–20 mile radius) in which to invest. A "buy-sell" index that tracks active transactions of Congress members forecasts the returns on the aggregate U.S. housing index, while a similar index tracking inactive members' transactions does not. These findings suggests that superior information is likely responsible for

[31] This is consistent with the literature. For example Goldsmith-Pinkham and Shue (2020) estimate similar regressions but add a property fixed effect and report an R^2 of about 0.85.

most of the outperformance. We also find that counties where a higher number of Congress member owned properties tend to have higher growth in transfers from the Federal government. Our analysis fails to detect systematic evidence of side-payments or bribery.

Figure 1: Realized Real Estate Returns Over Time, Congress Members and All Homeowners

This figure shows the realized return of an initial $1,000 real estate investment of two portfolios from 1994 to 2017. The first portfolio (red solid line) tracks the performance of real estate holdings across all Congress members during their tenure in Congress. The second portfolio (blue dashed line) tracks the performance of real estate holdings across all homeowners. Portfolios are rebalanced monthly and returns are equal-weighted.

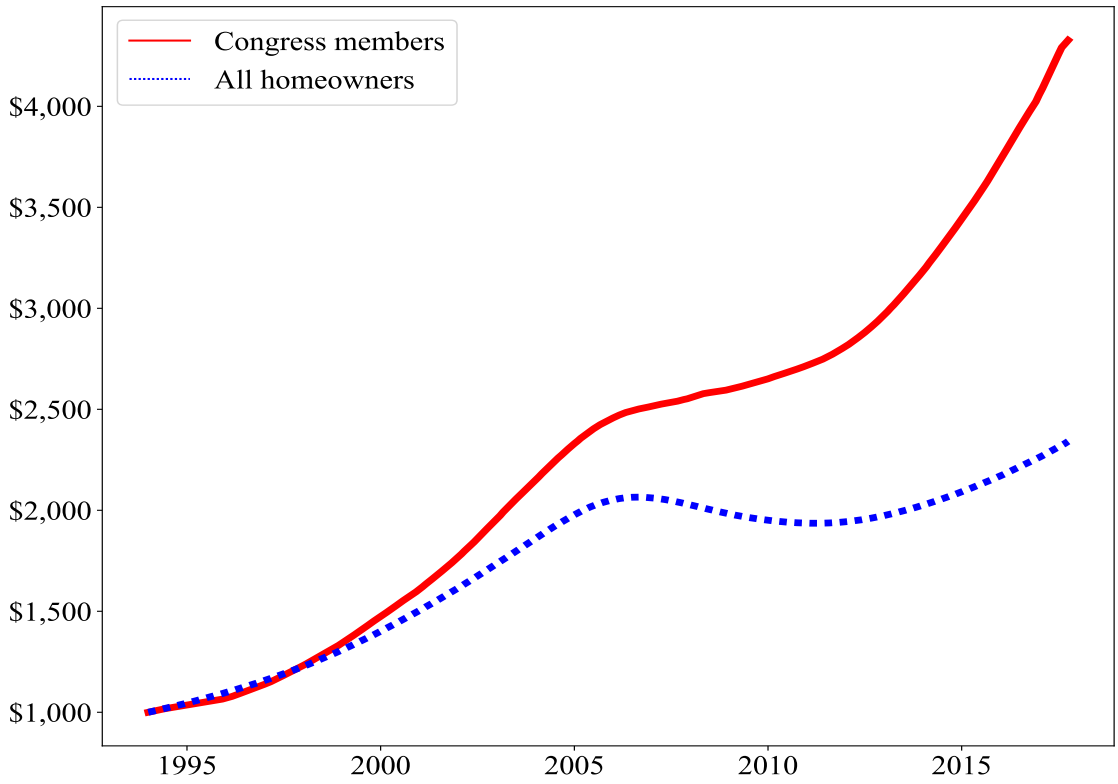
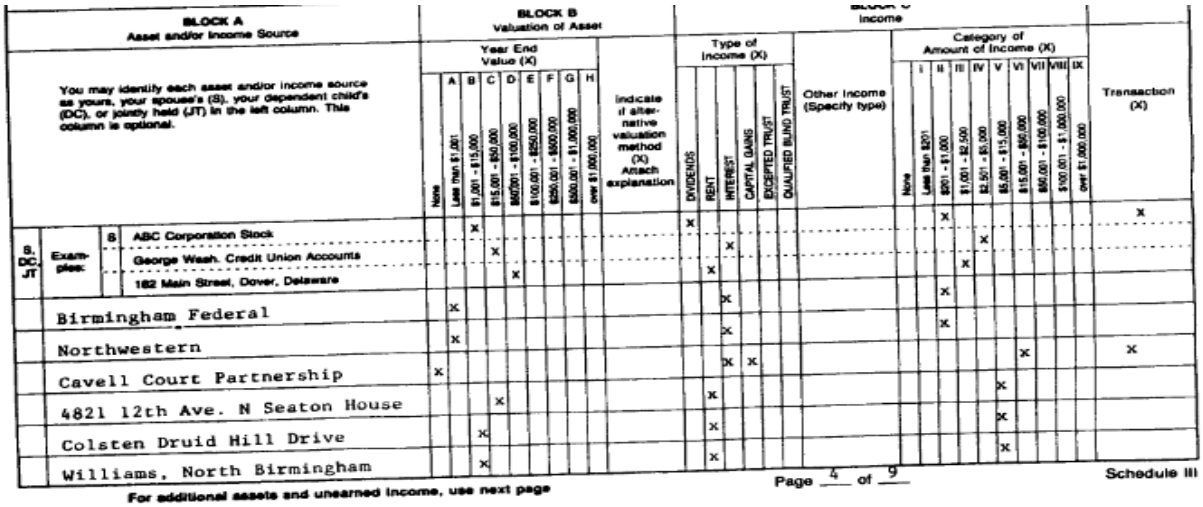


Figure 2: Excerpt of personal financial disclosure

This figure shows an excerpt of Schedule III from the 1993 personal finance declaration of Congressman Spencer Bachus (Alabama). Source: OpenSecrets.org



BLOCK A: Asset and/or Income Source	BLOCK B: Valuation of Asset — Year End Value (X)										BLOCK C: Income — Type of Income (X)						Other Income (Specify type)	BLOCK C: Income — Category of Amount of Income (X)									BLOCK D: Transaction (X)
You may identify each asset and/or income source as yours, your spouse's (S), your dependent child's (DC), or jointly held (JT) in the left column. This column is optional.	None	A: Less than $1,001	B: $1,001 - $15,000	C: $15,001 - $50,000	D: $50,001 - $100,000	E: $100,001 - $250,000	F: $250,001 - $500,000	G: $500,001 - $1,000,000	H: over $1,000,000	Indicate if alternative valuation method (X) Attach explanation	DIVIDENDS	RENT	INTEREST	CAPITAL GAINS	EXCEPTED TRUST	QUALIFIED BLIND TRUST		None	I: Less than $201	II: $201 - $1,000	III: $1,001 - $2,500	IV: $2,501 - $5,000	V: $5,001 - $15,000	VI: $15,001 - $50,000	VII: $50,001 - $100,000	VIII: $100,001 - $1,000,000	IX: over $1,000,000	
DC, JT — Examples: S ABC Corporation Stock		X									X									X							X
George Wash. Credit Union Accounts				X									X								X						
182 Main Street, Dover, Delaware					X							X															
Birmingham Federal		X											X							X							
Northwestern		X											X							X							X
Cavell Court Partnership	X												X	X									X				
4821 12th Ave. N Seaton House				X							X												X				
Colsten Druid Hill Drive			X								X												X				
Williams, North Birmingham			X								X																

For additional assets and unearned income, use next page

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Schedule III

SCHEDULE III—ASSETS AND "UNEARNED" INCOME

Continuation Sheet (if needed)

Reporting Individual's Name: Bachus, III

BLOCK A: Asset and/or Income Source	BLOCK B: Valuation of Asset — Year End Value (X)										BLOCK C: Income — Type of Income (X)						Other Income (Specify type)	BLOCK C: Income — Category of Amount of Income (X)									BLOCK D: Transaction (X)
You may identify each asset and/or income source as yours, your spouse's (S), your dependent child's (DC), or jointly held (JT) in the left column. This column is optional.	None	A: Less than $1,001	B: $1,001 - $15,000	C: $15,001 - $50,000	D: $50,001 - $100,000	E: $100,001 - $250,000	F: $250,001 - $500,000	G: $500,001 - $1,000,000	H: over $1,000,000	Indicate if alternative valuation method (X) Attach explanation	DIVIDENDS	RENT	INTEREST	CAPITAL GAINS	EXCEPTED TRUST	QUALIFIED BLIND TRUST		None	I: Less than $201	II: $201 - $1,000	III: $1,001 - $2,500	IV: $2,501 - $5,000	V: $5,001 - $15,000	VI: $15,001 - $50,000	VII: $50,001 - $100,000	VIII: $100,001 - $1,000,000	IX: over $1,000,000	
DC, JT																											
1213 Impala Drive				X							X												X				
2612 Janice Circle					X						X												X				
1237 Branchwater Lane						X					X										X						
Civic Center Prof. Bldg						X					X													X			

Table I: Summary statistics I - Location of Properties

This table shows the percentage of properties located in DC, Congress district, Congress member state, and urban area for Congress members, governors, investment advisors, medical doctors, and all homeowners datasets. The properties are from two-way transactions.

	Congress Member	Governor	Investment Advisor	Medical Doctor	All owners
Properties in DC (%)	8.89%	0	0.14%	0.08%	0.17%
Properties in Congress district (%)	36.91%	-	-	-	-
Properties in Congress member state (%)	81.61%	-	-	-	-
Properties in urban area (2000 Census) (%)	84.04%	63.04%	87.60%	85.12%	80.80%
Properties in urban area (2010 Census) (%)	91.23%	76.09%	94.45%	94.62%	89.49%
Number of properties	821	46	8,454	5,874	18,827,384

Table II: Summary statistics II - Property Characteristics

This table presents summary statistics of real estate properties owned by Congress members, governors, homeowners, investment advisors, and medical doctors.

Panel A: Congress Members' Properties						
	count	mean	std	25%	50%	75%
Year Built	582	1971.46	33.57	1954	1983	1997
Building Area Sq.ft (000s)	546	3.20	6.99	1.36	1.89	2.83
Lot Size Sq.ft (000s)	515	174.07	1174.96	3.47	8.07	23.27
No. Beds	631	2.16	1.69	0	2	3
No. Baths	600	1.97	1.40	1	2	3
Holding Period (years)	640	6.42	4.15	3.23	5.51	8.53
Price (000s)	1,280	568.39	1979.79	165.00	276.50	499.25
Price/Median Zipcode Transaction Price	1,290	2.62	12.75	0.80	1.25	1.99
Price/Median County Transaction Price	1,290	2.78	11.57	0.84	1.39	2.32
Price/Median State Transaction Price	1,290	2.95	12.45	0.86	1.42	2.48
No. Two way transactions per property	640	1.63	0.87	1	1	2

Panel B: Governors' Properties						
	count	mean	std	25%	50%	75%
Year Built	26	1977.92	32.98	1969	1995	2000
Building Area Sq.ft (000s)	24	17.98	68.81	1.62	2.33	3.92
Lot Size Sq.ft (000s)	30	666.34	2842.80	6.67	16.70	97.79
No. Beds	32	1.41	1.83	0	0	3
No. Baths	29	1.62	1.56	0	2	3
Holding Period (years)	32	6.03	4.18	2.98	4.64	7.27
Price (000s)	64	1029.28	1618.39	218.75	511.12	979.75
Price/Median Zipcode Transaction Price	64	5.27	12.62	1.04	1.91	4.43
Price/Median County Transaction Price	64	5.88	10.78	1.33	2.78	5.28
Price/Median State Transaction Price	64	6.09	10.30	1.39	3.02	5.57
No. Two way transactions per property	32	1.66	1.29	1	1	2

Panel C: All Properties						
	count	mean	std	25%	50%	75%
Year Built	16,259,239	1976.60	27.37	1961	1984	1998
Building Area Sq.ft (000s)	15,258,842	1.99	1.14	1.25	1.68	2.38
Lot Size Sq.ft (000s)	14,355,436	27.84	70.89	5.73	8.67	16.83
No. Beds	17,291,812	2.16	1.62	0	3	3
No. Baths	16,264,946	1.74	1.09	1	2	2.5
Holding Period (years)	24,972,101	5.76	4.10	2.64	4.70	7.90
Price (000s)	43,228,031	250.31	225.60	115.00	183.00	305.00
No. Two Way Transactions per property	17,316,292	1.44	0.72	1	1	2

Continued on next page

Table III: Summary statistics II - Property Characteristics

Panel D: Medical Doctors' Properties						
	count	mean	std	25%	50%	75%
Year Built	5,109	1983.50	23.24	1972	1990	2001
Building Area Sq.ft (000s)	4,502	2.87	8.40	1.41	2.12	3.22
Lot Size Sq.ft (000s)	4,135	26.97	191.73	6.33	10.02	17.62
No. Beds	5,315	2.37	1.69	0	3	4
No. Baths	4,884	1.98	1.41	1	2	3
Holding Period (years)	5,315	6.35	4.25	3.07	5.32	8.74
Price (000s)	10,630	371.55	496.06	142.48	250.00	440.00
Price/Median Zipcode Transaction Price	10,630	1.83	2.14	0.85	1.34	2.14
Price/Median County Transaction Price	10,630	2.28	2.85	0.92	1.59	2.70
Price/Median State Transaction Price	10,630	2.40	3.25	0.95	1.64	2.82
No. Two way transactions per property	5,315	1.76	0.92	1	2	2

Panel E: Investment Advisors' Properties						
	count	mean	std	25%	50%	75%
Year Built	7,352	1974.77	29.90	1957	1985	1998
Building Area Sq.ft (000s)	6,862	2.20	2.95	1.31	1.83	2.61
Lot Size Sq.ft (000s)	6,357	204.56	12065.09	5.50	8.71	15.81
No. Beds	7,778	2.20	1.70	0	3	3
No. Baths	7,366	1.81	1.28	1	2	2.5
Holding Period (years)	7,794	6.26	4.06	3.09	5.31	8.51
Price (000s)	15,588	359.02	409.22	159.22	254.00	421.50
Price/Median Zipcode Transaction Price	15,588	1.36	1.23	0.81	1.15	1.62
Price/Median County Transaction Price	15,588	1.65	1.68	0.85	1.27	1.92
Price/Median State Transaction Price	15,588	1.86	2.12	0.89	1.37	2.17
No. Two way transactions per property	7,794	1.81	0.97	1	2	2

Table IV: Congress members' buy-sell index and future returns

This table presents estimates of the slope coefficient from regressing the Housing Price Index (HPI) return (Federal Reserve Economic Data series USSTHPI) at various horizons on the Congress members' buy minus sell index, $BMS_t = \frac{B_t - S_t}{B_t + S_t}$ where B_t (S_t) is the total number of Congress members' purchases (sales) in quarter t. The t-statistics are Newey and West (1987) with lags equal to the forecast horizon. The top panel uses the national index as independent variable; the middle panel uses the state index; and the bottom panel uses the state index and controls for the return on the national housing index.

horizon	1q	4q	8q	12q	1q	4q	8q	12q
	In Congress				Out of Congress			
	Panel A: Aggregate HPI							
coeff.	0.0104	0.0274	0.0523	0.0602	-0.0148	-0.0493	-0.0800	-0.1155
	(2.94)	(2.07)	(2.21)	(1.67)	(-3.59)	(-2.46)	(-1.91)	(-1.72)
R^2	0.065	0.036	0.035	0.019	0.141	0.163	0.141	0.130
	Panel B: State HPI							
coeff.	0.0020	0.0075	0.0129	0.0167	-0.0009	-0.0031	-0.0043	-0.0064
	(3.98)	(2.65)	(2.06)	(1.70)	(-1.89)	(-1.08)	(-0.67)	(-0.62)
R^2	0.005	0.005	0.004	0.003	0.001	0.001	0.001	0.001
	Panel C: State HPI, controlling for aggregate HPI							
coeff.	0.0006	0.0025	0.0032	0.0030	-0.0004	-0.0023	-0.0053	-0.0086
	(2.01)	(1.38)	(0.78)	(0.46)	(-1.17)	(-1.17)	(-1.24)	(-1.29)
R^2	0.544	0.553	0.561	0.565	0.544	0.552	0.561	0.565

Table V: Congress members' excess annual returns

This table presents estimates of Congress member excess returns from real estate transactions. Panels A and B present the spread between the median and value-weighted return of Congress members, r_c, and of the control benchmark, r_b, with bootstrapped p-values. Panels C–E presents regressions estimates of the coefficient β on the Congress dummy variable in equation (2). 'All' refers to all Congress member returns; '% years in Congress' refers to estimates obtained by replacing the Congress member dummy with the fraction of the transaction's holding period that overlaps with the Congress member's term in Congress; 'Pre-Congress', 'During-Congress' and 'Post-Congress' refers to returns earned before, while in, and after Congress, respectively. 'Inv. Adv.' and 'MDs' refers to returns earned by investment advisors and medical doctors, respectively.

	All	% years in Congress	Pre-Congress	During-Congress	Post-Congress	Inv. Adv.	MDs
	Panel A: Median excess return						
$r_c^{\text{med}} - r_b^{\text{med}}$	0.0059	–	0.0249	0.0372	0.0017	0.0012	-0.0026
p-val	0.035	–	0.000	0.000	0.459	0.086	0.992
	Panel B: Mean VW excess return						
$r_c^{\text{vw}} - r_b^{\text{vw}}$	0.0152	0.0155	0.0276	0.0331	-0.0244	0.0144	0.0038
p-val	0.060	0.079	0.042	0.017	0.850	0.008	0.223
	Panel C: Mean EW excess return, No fixed effects						
β	0.0131	0.0194	0.0297	0.0324	-0.0018	0.0072	0.0004
t-stat	(3.26)	(3.43)	(2.89)	(4.26)	(-0.11)	(6.96)	(0.24)
	Panel D: Mean EW excess return, Year fixed effects						
β	0.0136	0.0197	0.0123	0.0217	0.0133	0.0070	-0.0029
t-stat	(3.68)	(3.89)	(1.24)	(3.11)	(0.83)	(8.01)	(-2.36)
	Panel E: Mean EW excess return, Year×State fixed effects						
β	0.0064	0.0076	0.0120	0.0099	0.0029	0.0053	-0.0037
t-stat	(1.82)	(1.53)	(1.28)	(1.43)	(0.19)	(6.49)	(-3.15)
n(Group)	640	445	162	185	41	7,794	5,315
n(All)	24,972,178	24,972,178	24,972,178	24,972,178	24,972,418	24,972,448	24,972,379

Table VI: Congress members' excess annual returns as function of distance

This table presents the results of the analysis described in Section 3.4. For each Congress member return, we collect all other returns within a radius of d miles, and run a regression with time fixed effects and a Congress member dummy. In each column, we report the mean and Fama and MacBeth (1973) t-statistic of the coefficient β on the Congress dummy variable in regression (2), representing the Congress member's average return in excess of the benchmark within a distance d.

	All	% years in Congress	Pre-Congress	During Congress	Post-Congress
$d = \infty$	0.0140	0.0241	0.0131	0.0226	0.0070
t-stat	(3.75)	(2.53)	(1.27)	(3.28)	(0.42)
$d = 100$	0.0107	0.0192	0.0136	0.0155	0.0000
t-stat	(3.04)	(2.10)	(1.42)	(2.29)	(0.00)
$d = 50$	0.0100	0.0179	0.0136	0.0132	-0.0006
t-stat	(2.86)	(1.97)	(1.46)	(1.98)	(-0.03)
$d = 20$	0.0080	0.0117	0.0136	0.0091	-0.0026
t-stat	(2.31)	(1.28)	(1.47)	(1.36)	(-0.16)
$d = 10$	0.0063	0.0045	0.0129	0.0075	-0.0035
t-stat	(1.86)	(0.50)	(1.42)	(1.13)	(-0.23)
$d = 5$	0.0043	-0.0003	0.0114	0.0049	-0.0030
t-stat	(1.29)	(-0.04)	(1.28)	(0.75)	(-0.20)
$d = 1$	0.0029	0.0027	0.0044	0.0059	0.0017
t-stat	(0.90)	(0.23)	(0.52)	(0.95)	(0.12)
$d = 0.5$	0.0026	-0.0052	0.0052	0.0073	-0.0064
t-stat	(0.86)	(-0.50)	(0.70)	(1.14)	(-0.43)

Table VII: Summary statistics of excluded and included returns

This table presents the 25- , 50- and 75-percentiles of the return distribution for several groups of transactions. Clockwise, from the top left are (i) Congress member returns, (ii) all repeat sales transactions from ZTRAX, (iii) returns of medical doctors, (iv) returns of investment advisors. For each group, we separate returns into returns that are excluded because classified as construction, returns excluded for other reasons, and included returns.

	Congress				All owners			
	Frac.	25%	Median	75%	Frac.	25%	Median	75%
Excluded:								
- Construction	0.072	10.3%	24.1%	74.0%	0.060	12.1%	103.1%	1079.1%
- Other	0.149	5.2%	83.1%	316.2%	0.185	0.0%	68.3%	256.0%
Included	0.779	0.2%	4.4%	11.2%	0.755	-0.2%	3.8%	10.1%
	Investment advisors				MDs			
	Frac.	25%	Median	75%	Frac.	25%	Median	75%
Excluded:								
- Construction	0.026	3.5%	11.9%	25.7%	0.036	9.5%	16.6%	32.6%
- Other	0.073	2.4%	42.9%	117.3%	0.085	0.8%	33.5%	138.8%
Included	0.900	0.6%	4.0%	9.1%	0.879	-0.6%	3.4%	9.4%

Table VIII: Analysis of excluded transactions

This table presents the spread between the median and value-weighted return of Congress members, r_c, and of the control benchmark, r_b, with bootstrapped p-values. We exclude transactions classified as construction. In the column labeled '% years in Congress', the value-weighted average is computed across all transactions that overlap with the Congress member's term, where the weight is set to the fraction of overlap.

	All	% years in Congress	Pre-Congress	During Congress	Post-Congress
$r_c^{\text{med}} - r_b^{\text{med}}$	0.0071	–	0.0399	0.0460	0.0323
p-val	0.050	–	0.000	0.000	0.025
$r_c^{\text{vw}} - r_b^{\text{vw}}$	0.0050	0.0543	0.0453	0.0141	-0.0054
p-val	0.283	0.018	0.038	0.123	0.603
n	762	359	202	229	62

Table IX: Congress property holding and winsorized future federal transfers

This table reports the results of regressing future 1-, 3-, and 5-year growth rates of per capita net intergovernmental transfer from the federal government on the number of Congress member properties in a county. Growth rates of per capita net federal intergovernmental transfer are winsorized at the 1% and 99% level. Panel A includes all counties. Panel B includes counties in the top tercile based on population. County level controls include per capita income, population, unemployment rate, fraction of whites, fraction of females, fraction of population over 65, fraction of population below 16 and fraction of employment computed at the 4-digit industry classification level, from Quarterly Census of Employment and Wages (QCEW). County and year fixed effects are included and standard errors are clustered at the county level. *,**, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: All counties			
	1 Year	3 Year	5 Year
Number of Properties	0.0013***	0.0057***	0.0088***
	(0.0004)	(0.0014)	(0.0029)
Fit statistics			
Observations	29,701	27,683	25,951
R^2	0.0977	0.1523	0.1724
Fixed-effects			
County	Yes	Yes	Yes
Year	Yes	Yes	Yes
Controls			
County demographics	Yes	Yes	Yes
County industry structure	Yes	Yes	Yes

Panel B: Counties in top tercile by population			
	1 Year	3 Year	5 Year
Number of Properties	0.0013***	0.0056***	0.0087***
	(0.0004)	(0.0014)	(0.0028)
Fit statistics			
Observations	16,498	15,656	14,204
R^2	0.0739	0.1255	0.1416
Fixed-effects			
County	Yes	Yes	Yes
Year	Yes	Yes	Yes
Controls			
County demographics	Yes	Yes	Yes
County industry structure	Yes	Yes	Yes

Table X: Returns to counterparties in Congress members' transactions

This table presents the average returns to investors who transact with Congress members. For each Congress member transaction (not necessarily a repeat sale), we identify the most recent previous repeat sale, if the Congress member bought, or the subsequent repeat sale if the Congress member sold. Panels A and B present the spread between the median and value-weighted return of Congress members' couterparties, r_{cp}, and of the contrtol benchmark, r_b, with bootstrapped p-values. Panels C–E reposts estimate of the regression in equation (2), following the same procedure as that in Table V, but using counterparties, instead of Congress members' returns.

	All	Pre-Congress	During Congress	Post-Congress
	Panel A: Median excess return			
$r_{cp}^{\text{med}} - r_b^{\text{med}}$	-0.0064	0.0033	-0.0063	-0.0202
p-val	0.995	0.227	0.972	1.000
	Panel B: Mean VW excess return			
$r_{cp}^{\text{vw}} - r_b^{\text{vw}}$	0.0057	0.0062	0.0065	0.0033
p-val	0.257	0.323	0.268	0.4540
	Panel C: Mean EW excess return, No fixed effects			
β	-0.0009	0.0112	0.0042	-0.0332
t-stat	(-0.26)	(1.97)	(0.87)	(-4.37)
	Panel D: Mean EW excess return, Year fixed effects			
β	-0.0004	0.0022	0.0053	-0.0192
t-stat	(-0.13)	(0.42)	(1.19)	(-2.76)
	Panel E: Mean EW excess return, Year×State fixed effects			
β	-0.0016	0.0029	-0.0005	-0.0119
t-stat	(-0.57)	(0.59)	(-0.12)	(-1.78)
n(Congress)	1,100	340	547	213
n(All)	24,972,184	24,972,184	24,972,184	24,972,184

Table XI: Prices paid by Congress members

This table presents results of a hedonic regression of prices on year fixed effects, zip code fixed effects, square footage, and dummy for whether the transaction is Congress member's sale or a purchase, as well as whether it happens before, during, or after a Congress member's term. The table reports coefficient estimates on these dummy variables.

	Pre		During		Post	
	Buy	Sell	Buy	Sell	Buy	Sell
coeff.	0.0493	-0.0012	0.1258	0.1213	0.1559	0.1778
t-stat	(2.57)	(-0.05)	(7.54)	(8.35)	(4.66)	(8.94)

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A Database construction and methodology details

In this appendix we describe the procedure we use to construct the database of U.S. Congress members' real estate transactions.

A.1 U.S. Congress members' financial disclosure reports

Our baseline sample consists of 4,931 unique real estate assets out of which 2,242 properties have full address information. The quality of the financial disclosure declarations available from *OpenSecrets.org* varies widely in our sample: sometimes a full address is listed, other times only the city or state. For this reason, the number of unique assets we identify may be less than 4,931.[32] Out of these 4,931 properties, 2,242 have full address information, that is, an address with street number and street name or an address with apartment number or unit/block/section number and subdivision name. In addition to identifying properties, we also collect the names of any reported holding companies through which a Congress member owns real estate, as well as the first and last year each property appeared in the declaration. We do not include passive ownership of REITs or small shares of large real estate holding companies. When available, we also collect the reported date when a property is bought or sold, although we find that this data is often missing or of poor quality. In total, we find 1,654 declared properties that have a disclosed buy date or sell date.

A.2 Merging Congress members financial disclosure information to Zillow data

In the first step of our database construction, out of the 2,242 declared properties with full addresses from the Congress members' financial disclosure reports, we are able to identify 1,182 in ZTRAX, a match rate of 52.7%. Using both algorithmic and manual search techniques (see Section A.2.1 below) we add 5,799 properties which very likely belong to Congress members, but did not appear in declarations. This does not necessarily imply that Congress members are not declaring a large fraction of their assets.

[32] For example, if one year, a property with a full address is declared, and another year a property with only the city is declared, we may count this as two separate properties, even though this may be the same property. Also, in our list of "assets" we include any declared company names that might potentially be linked to active real estate ownership. However, these companies might not actually own any real estate.

The discrepancy between the number of declared properties and the number of properties we attribute to Congress members may be due to several reasons. First, Congress members are not required to disclose their primary residences unless these properties generate income.[33] Second, the 5,799 additional assets we found may be transactions declared but without an address. Third, our procedure allows us to find assets that may have been sold before joining or bought after leaving Congress. In this case, there is no reason such assets would appear on a declaration.

Table A.1 shows the number of properties attributed to a U.S. Congress member at each stage of the database construction process, classified by state. Figure A.1 shows the number of declarations containing a property with full address that first appears in a given year. The number is relatively stable, with two exceptions: first, there are very few properties towards the end of our sample period, 2018, because those declarations have yet to be posted; second, there is a large spike in 1995, when many of the Congress members' declarations first become available. Figure A.2 shows that the match rate by year steadily rises from around 0.3 in 1990 to above 0.7 by 2015. This is not surprising since Zillow's coverage and data quality has improved in more recent years. The drop observed in 2017–2018 occurs because there were few Congress member transactions in those years.

A.2.1 Searching ZTRAX for U.S. Congress members transactions

Algorithmic search. We begin by casting a very wide net to search for any transaction that might potentially involve Congress members. We search for any transaction that matches one of the following criteria. First, if the Congress member declared an address,[34] we search for all transactions at that address that match either the Congress member's last name, or a spouse's last name (spouse names are found in Wikipedia), or any holding company that the Congress member declared. Second, we search the entire database for transactions that match the Congress member's first and last name or holding company name. We consider possible variations in Congress member

[33] Prior to the passage of the STOCK Act in 2012, even mortgages on Congress members' principal residences that produced no income were exempt from reporting requirements. Currently, mortgages are required to be disclosed, though the corresponding property is not.

[34] Sometimes, the Congress member does not declare an address but does declare an apartment number or a unit/block/section number, in these cases we can search ZTRAX to find the associated address.

names, e.g., nickname, abbreviation, and maiden name for female Congress members. If a Congress member has a middle name, we exclude the transactions with middle names that do not match the Congress member middle name. Both name and holding company name are exact string match. Of these, we keep only those transactions that happen in Washington D.C.; in the Congress members' state; or in any other state where the Congress member declared at least one property. Third, we search the entire database for transactions that match the Congress member's last name or holding company name,[35] and happen in Washington D.C. or ; in the Congress members' state; or in any other state where the Congress member declared at least one property. This results in a large number of potential transactions, especially for Congress members with common last names. For example, California Congressman Jerry Lewis has 22,492 potential transactions. However, the median Congress member has 81 potential transactions.

Manual search. We then manually read through all the potential transactions to identify those we believe are very likely to belong to a Congress member. This step is difficult to automate because it is common for addresses or first names to have spelling errors or equivalent variations.[36] Additionally, as discussed below, we may need to perform additional searches of public information. A typical manual search would start by looking for any combination of name and ZTRAX address that matches a declared transaction's name and address. Any such transactions are recorded as belonging to the Congress member. Similarly, any transactions where the combination address-date (within +/- one month) matches a declared transaction's address and date (not all declared transactions have dates) are recorded as belonging to the Congress member. Next, using any such found transactions, we use the exact spelling used by the Congress member in this transaction to look for other transactions with exactly the same spelling. This is useful for Congress members with common last names because there are many ways to write a first-last name combination, apthough when transacting, we observe that Cogress members tend to use the same first-last name combination. Additionally, Congress members often transact together with the same co-buyers

[35]For the company name, we require a complete match when searching the entire data base, and only the first 9 letters to match when searching only a previously declared city.

[36]For example, 14th Street West, West 14th Street, W 14th Street, W 14th St and W. 14th Street may all indicate the same location.

or co-sellers (such as a spouse or a business partner). Therefore, identifying one transaction as belonging to a Congress member helps to find others.

When unsure about whether a transaction belong to a Congress member, we use publicly available information about the names of the Congress member's spouse, children, parents, or siblings. We found the spouse's name to be particularly useful. We do not identify a transaction as a Congress member's if, for example, we simply find a Congress member's daughter buying a house. These additional names were used only as confirmation in cases we suspected that the Congress member was part of a transaction.[37] Additionally, when unsure about whether a transaction involves a Congress member, we use the frequency of last names from the Census Bureau, combined with the frequency of first names,[38] and the population of a particular state, to guide our decision. If the product of the frequency of a Congress member's first name, the frequency of his/her last name, and the population of his/her state equaled a number below 0.5, we would usually attribute such a transaction to that Congress member. We also used additional public information to refine our search. For example, if we knew from public sources that a Congress member grew up in a small town, and there was a transaction matching the Congress member's first and last name in that town, we would attribute this transaction to that Congress member, even in the case of a relatively common name. Admittedly, this manual matching step involves some subjectivity and the result may be imperfect. Nevertheless, we are confident that the vast majority of transactions we identify as involving Congress members are properly identified.

A.3 Two-way transactions

In this section we describe the construction of the sample of two-way transactions data for the control group of all homeowners (Section A.3.1) and for the set of Congress members (Section A.3.2).

[37] For example, California Congress member Brian Bilbray declared 2466 Unicornio St, Carlsbad, CA. While we found transactions at this address, there were no transactions with the name Bilbray. However, there were transactions with the last name Clute, which is Congressman Bilbray's mother's last name. Since this address was declared by Congressman Bilbray, we matched these transactions to him. Had we not discovered that Clute was his mother's last name, we would have left this declared property unmatched.

[38] From https://www.babynamewizard.com/voyager

A.3.1 Control two-way transactions (all homeowners)

We use the following algorithm to construct two-way transactions associated to all one-way transactions in ZTRAX.

1. We first clean up one-way transaction using the following procedure:

   (a) Exclude any transaction with internal transaction flag from Zillow to exclude non-arm's length housing transactions.[39]

   (b) Exclude any transaction that involves buying or selling multiple properties. We cannot calculate returns for properties that are bought in one transaction but sold separately because we don't know the exact buy price for each property. This implies that we exclude some valid two-way transactions: if two properties were bought and sold together by a property owner, we can compute returns for these two properties.

   (c) Exclude any transaction without transaction price or with price lower than $1,000. Doing so eliminates both transactions with unrealistic prices and non-arm's length transactions that are frequently recorded with a price of $0. We also exclude transactions without transaction date, ImportParcelID, zipcode or geolocation. ImportParcelID is an unique identifier of a property in ZTRAX.

   (d) For each ImportParcelID, choose all transactions associated with a particular ImportParcelID.

   (e) Sort the transactions within each ImportParcelID by date.

   (f) Keep transactions where the buyer's name is different from that of the seller. We assume that buyer and seller names are different if their similarity score is larger than 0.15 or their fuzzy score is lower than 60. The similarity score between two strings A and B is defined as the ratio $\frac{\#(A \cap B)}{\#(A \cup B)}$, where the numerator is the number of all common letters in both A and B and the denominator is the number of all letters in both strings. The

[39] This is when the owner adds a spouse's name to the deed, or transfers the property to herself, or to children, or to a trust, or to a business under the owner's control.

fuzzy score uses fuzzy logic to determine the similarity between two strings.[40]

(g) Exclude any transaction where the seller's name is equal to the previous transaction's seller's name or the buyer's name is equal to the previous transaction's buyer's name. We exclude these transactions because it is difficult to calculate returns of these transactions, e.g. a buyer may buy one property from different sellers at different time.

(h) Exclude any transaction where the consecutive transaction happens within 10 days.

2. We then form two-way transactions using every two consecutive transactions from the transaction time sorted one-way transactions. We exclude any 2-way transaction where the buyer name in the buy transaction is different from the seller name in the consecutive sell transaction.

A.3.2 Congress members' two-way transactions

To construct Congress members' two-way transaction we start by casting a wide net to find potential Congress members' one-way transactions. We then manually check carefully these one-way transactions to identify a list from which to construct Congress members' two-way transactions.

Specifically, we first look for buy and sell transactions of Congress members for the same property. We use ImportParcelID as the identifier of a property. If this identifier is missing, we use the physical property address as the identifier of a property. If we find only one Congress member transaction for one ImportParcelID, we search the ImportParcelID in Zillow data set and find all one-way transactions of the ImportParcelID. We then manually find two-way transactions for Congress members. This step helps us find additional Congress member one-way transactions that are missed due to missing property addresses or misspelling in buyer or seller names.

To construct Congress members' two-way transactions we do not require that the buyer and seller names on two consecutive transactions of a given property match—though most of Congress members' two-way transactions satisfy this condition. For some Congress members' transactions, we have declared transaction dates and holding companies information, which allow us to find more

[40] We implement this step through the Python package *fuzzywuzzy* available at https://pypi.org/project/fuzzywuzzy/.

two-way transactions for Congress members. For example, Congress member Darrell Edward Issa declared that he bought 1709 La Costa Meadows Dr, San Marcos on March 29, 2006 and sold it on March 14, 2011. The buyer name in ZTRAX for the transaction on March 29, 2006 is DEI LLC, which is a company declared by him, but the seller name for the transaction on March 14, 2011 is 1709 LA COSTA MEADOWS LP, which does not match with DEI LLC. Even though he did not declare 1709 LA COSTA MEADOWS LP, we still think this is a valid two-way transaction for Congress member Darrell Edward Issa. This two-way transaction would be excluded if we apply the algorithm described in A.3.1 to Congress member one-way transactions. Around 75% of Congress member two-way transactions can be found in the two-way transaction data set we construct from ZTRAX.

A.4 Excluded transactions

S&P describes the methodology for the S&P/Case-Shiller Home Price indices as follows:[41] "These sales pairs are further examined to eliminate outliers that might distort the calculations. Outliers include non-arm's length transactions (e.g., property transfers between family members); transactions immediately preceding or subsequent to substantial physical changes to a property; transactions where the property type designation is changed (e.g., properties originally recorded as single-family homes are subsequently recorded as condominiums); and suspected data errors where the order of magnitude in values appears unrealistic." Although the above Case-Shiller document loosely explains which transactions are excluded, unfortunately, it does not provide an exact algorithm. In our decision of which transactions to exclude, we do our best to match the loose explanation in the Case-Shiller document.

In our analysis, we exclude two-way transactions that: (i) we identify as affected by construction,[42] (ii) appear to be non-arm's length based on buyer and seller names or known relationships, (iii) have a buy or sell price below $10,000, (iv) have a holding period shorter than 183 days,

[41] https://www.spglobal.com/spdji/en/documents/methodologies/methodology-sp-corelogic-cs-home-price-indices.pdf

[42] Transactions are identified as affected by construction if the buyer or seller name is on a list of large construction firms, or contains the words "Constr", "Home", "Develop", or "Build", or the construction date (when available) is during the holding period.

(v) have a total return above 900% or below −90%, or (vi) have an annualized return above 50% or below −50%, compared to the median annualized return in the data (4.18%). Finally, we include only transactions for 1994–2017 because prior to 1994, ZTRAX contains relatively few transactions. We also experiment with alternative cutoffs and find that for a fairly large range of specifications, our key results are unaffected. Importantly, in our analysis, we apply exactly the same transaction exclusion procedure to the transactions of Congress members and all homeowners.

A.5 Construction of year fixed effects

We construct our time fixed effects using a procedure inspired by that used to estimate housing price indices. Specifically, since our sample starts in year 1994 and ends in year 2017, the time fixed effect T_i in the regression equation (2) is a 24×1 vector with elements $T_{i,k}$, $k = 1994, \ldots, 2017$. Specifically, the value of the year fixed effect $T_{i,k}$, for $k = 1994, \ldots, 2017$, is given by

$$T_{i,k} = \begin{cases} \frac{t^+_{i,b} - t_{i,b}}{\tau_i} & \text{if} \quad k \text{ is the buy-year} \neq \text{sell-year} \\ \frac{1}{\tau_i} & \text{if} \quad t^+_{i,b} < k < t^-_{i,s} \\ \frac{t_{i,s} - t^-_{i,s}}{\tau_i} & \text{if} \quad k \text{ is the sell-year} \neq \text{buy-year} \\ 1 & \text{if} \quad k \text{ is both a buy- and sell-year} \\ 0 & \text{otherwise} \end{cases}, \tag{A.1}$$

where $t_{i,b}$ and $t_{i,s}$ are the buy date and the sell date of transaction i and $\tau_i = t_{i,s} - t_{i,b}$ denotes the holding period, in years. In equation (A.1), we denote by $t^+_{i,b}$ as the last day in the buy year of transaction i and $t^-_{i,s}$ as the first day in the sell year. The difference, in year units, $t^+_{i,b} - t_{i,b} \in (0, 1)$ and $t_{i,s} - t^-_{i,s} \in (0, 1)$ represents the portion of a buy or sell year k for which a property was held. The following cases are of interest: (i) if year k corresponds to the buy but not the sell year, then the fixed effect is the the portion of year k from the purchase date to the end of the year, $t^+_{i,b} - t_{i,b}$, divided by the holding period τ_i; (ii) if year k is neither the buy nor sell year, then the fixed effect is $1/\tau_i$; (iii) if year k is the sell but not the buy year, then the fixed effect is the portion of year k up until the sell date divided by the holding period τ_i; and (iv) if the property was both bought and sold in year k, then the fixed effect is set to 1.

Figure A.1: Number of declared properties with full address

This figure shows the number of declared properties with a full address, by year. These records are collected from Congress members' financial disclosure reports. We obtain Congress members' financial disclosure reports from OpenSecrets.org.

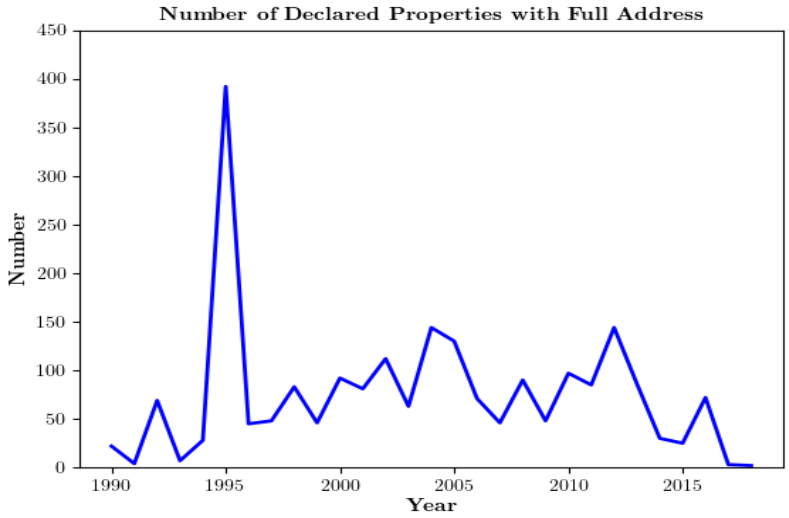

Figure A.2: Transactions found in ZTRAX

This figure shows the fraction of assets that were declared with an address that we are able to find in ZTRAX, by year.

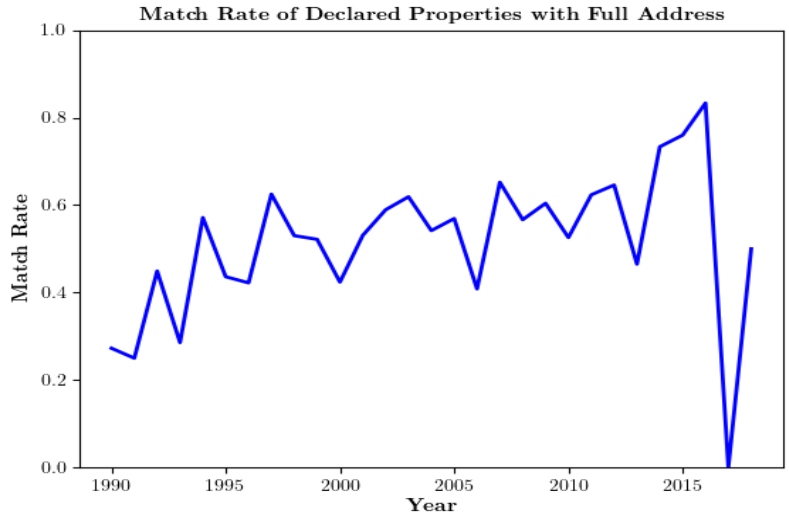

Table A.1: Congress members' declarations and match rate

This table summarizes the steps of our search algorithm. The columns contain the number of: (i) Congress members' declarations; (ii) unique properties declared; (iii) unique properties declared with a full address; (iv) declared full address properties found in ZTRAX; and (v) additional properties found in ZTRAX that we believe belong to the Congress member. Results are broken down by state.

State	# Congress	# Declared	# Declared w/ Address	# Declared w/ Address & found in ZTRAX	# Extra found in ZTRAX
Alabama	20	107	51	26	73
Arizona	25	102	34	20	107
Arkansas	16	50	18	6	40
California	111	743	353	203	493
Colorado	23	213	116	67	873
Connecticut	15	75	30	9	22
Delaware	8	21	11	3	9
D.C.	1	1	0	0	0
Florida	76	344	154	92	617
Georgia	35	192	82	43	126
Hawaii	10	23	13	8	40
Illinois	53	212	126	77	158
Iowa	13	39	9	4	63
Kentucky	18	64	30	16	52
Louisiana	27	100	42	13	43
Maryland	19	99	50	35	47
Massachusetts	21	94	49	19	50
Michigan	40	119	45	26	92
Minnesota	27	53	17	9	64
Nebraska	15	62	11	2	37
Nevada	15	77	45	37	116
New Hampshire	12	71	22	9	57
New Jersey	29	176	63	42	224
New York	75	226	107	64	155
North Carolina	34	273	133	43	466
Ohio	46	174	77	36	823
Oklahoma	18	80	18	10	55
Oregon	12	76	41	17	31
Pennsylvania	57	143	91	57	106
Rhode Island	8	67	31	16	27
South Carolina	18	267	131	62	184
Tennessee	24	137	52	23	177
Vermont	4	15	5	4	9
Virginia	35	209	95	39	97
Washington	23	66	35	24	79
West Virginia	11	48	23	8	26
Wisconsin	22	113	32	13	161
Total	1,016	4,931	2,242	1,182	5,799

B Additional Results

This appendix contains details of additional results that are only briefly mentioned in the paper.

B.1 Primary residence vs. investment properties

Property type is an important dimension of the analysis of real estate returns. In this section we explore whether Congress members' excess returns differ depending on whether the transaction involves a primary residence or an investment property. We classify Congress members' properties using the following criteria: (i) If a property address matches a Congress member's mailing address that is not an office building, then we classify the property as a primary residence. Mail addresses are only available on financial disclosure reports in early 2000s; (ii) If a property is not a single-family residence or condominium, or is transacted by Congress members' companies, then we classify the property as an investment property; (iii) If a property does not have a mailing address but the buy and sell dates are consistent with the Congress member's career path,[43] we classify the property as a primary residence and as an investment property, otherwise. We also utilize online sources, such as news articles and Wikipedia to get approximate or exact locations of Congress members' primary residences.

Out of the total 821 two-way transactions (see Section 2.5 and Table I in the paper), around 40% involve primary residences and 60% involve investment properties. After implementing the same exclusion process described in Appendix A.3 for Congress members' two-way transactions, we have 640 two-way transactions left, of which 45.63% are classified as involving primary residences.

Our main finding is that Congress member excess returns are mostly driven by investment properties. The median annualized excess return of primary residences is 0.37% and the median annualized excess return of investment properties is 0.84%. Congress members earn higher returns on their investment properties.

We estimate Congress members' excess returns on their primary residences and investment

[43] For example, if a Congress member was a lawyer in New York between 2002–2008, and we find a property of the Congress member which was bought in 2002 and sold in 2008, then we classify the property as the primary residence of the Congress member in New York.

properties, respectively, using the same procedure we follow for Table V in the main text. Table B.1 shows the results. In Panel C, we estimate the regression from equation (2) without fixed effects. Across all locations and time periods in our data, Congress members earn average annualized excess returns of 1.03% with a t-statistic of 2.11 on their primary residences and slightly higher returns on their investment properties, 1.54% with t-statistic of 2.51. In Panel D, we estimate the same regression with time fixed effects. The annualized excess returns on primary residences falls slightly to 0.99%, with a t-statistics of 2.06. This means that the returns of Congress member primary residences can be barely attributed to national level market timing. However, for investment properties, the annualized excess return is 1.67% with a t-statistic of 3.05. In Panel E, we estimate equation (2), including year fixed effects interacted with state fixed effects. After controlling for market timing at the state level, the annualized excess return on primary residences is -0.15% and no longer significant, while the annualized return on investment properties is 1.31%, with a t-statistic of 2.40. All excess returns of Congress member primary residences seem to be explained by state level market timing. However, there is still a large portion of annualized excess returns of investment properties that cannot be explained by either national level market timing or a mix of market timing and state level location picking—the level of excess returns on investment properties only drops 1/6 after controlling for state level market timing, and remains highly significant.

B.2 Congress members' characteristics

To understand the variation in Congress member returns, we investigate the connection between real estate returns and Congress member characteristics, such as party affiliation, education, and gender. We collect Congress member gender, education, party, chamber, age and wealth level data from various data sources.[44]

We regress log Congress member annualized housing returns on Congress member characteristics. Table B.2 shows the results. In column (1) we consider only Congress member characteristics,

[44]Congress members' estimated wealth is collected from OpenSecrets.org. They estimate the range of Congress members' wealth level based on the asset and liability range reported in Congress members' financial disclosure documents. The details of their methodology is here: https://www.opensecrets.org/personal-finances/methodology. Congress member gender, education, party, age and chamber data are obtained from https://bioguide.congress.gov/.

property locations and holding days controls; in column (2) we add property characteristics; in column (3) we add Congress members' wealth level controls through dummy variables tracking the distribution of the average wealth level. Specifically, WealthLevel_k is equal to 1 if the average estimated wealth level across time of a Congress member is in the bottom k_{th} tercile, $k = 1, 2, 3$. Columns (4) and (5) split the sample into primary residences and investment properties, respectively, as discussed in Appendix B.1.

The results from Table B.2 show that none of the Congress member characteristics is significant in explaining excess returns. For example, Republican Congress members do not earn significantly higher returns than Democrats; having worked as a senator does not help Congress members gain higher returns in the housing market; female Congress members do not earn significantly different returns than male Congress members; holding a graduate degree does not contribute to higher housing returns. The R^2 of these regressions is fairly small—less than 5% of the variations in Congress member housing returns can be explained by their personal characteristics within the Congress member two-way transaction sample. Somewhat surprisingly, column (5) shows that Congress members who held a graduate degree seem to have *lower* housing returns in investment properties compared to colleagues without a graduate degree, although the estimate is marginally significant.

Overall, there does not seem to be any systematic connection between Congress member characteristics and real estate returns.

B.3 Powerful committees

In this section we further investigate the information channel discussed in Section 4.1 by exploring whether serving in a powerful committee strengthens the excess returns of active Congress members, shown in Section 3.3. Committee members may obtain useful information about government funds flow, economy status etc., that can help them time the market or pick location for their real estate investment. Cohen, Coval, and Malloy (2011) find that federal transfers or discretionary government contracts for a state increase with the seniority rank of Congress members from that state. Thus, members of a powerful committee may direct discretionary funds to their home state,

which, in turn, may increase housing returns in that area.

We take the list of the ten most influential committees from Edwards and Stewart III (2006) and Cohen, Coval, and Malloy (2011)[45] and obtain the house representative and senator committee assignment data from Charles Stewart's Congressional Data Page.[46] In our sample, there are 364 Congress members and a total 640 two-way real-estate transactions (Table II). Of the 364 Congress members, 313 have served in a powerful committee, spanning a total of 568 two-way transactions. We split Congress member two-way transactions during Congress into those that happened "Pre-committee", "In-committee" and "Post-committee". Of the total 640 two-way transactions in our sample, 185 have both a buy and sell transaction that happen when Congress members are in office. Among these, we define a Pre-committee transaction as one in which both buy and sell happen before a Congress member joins a powerful committee. Similarly we define In-committee and Post-committee transactions. In summary, we end up with 5 Pre-committee two-way transactions, 141 In-committee, and 3 Post-committee transactions.

The results reported in Table B.3 are qualitatively similar to our baseline results of Table V. Since the number of Pre- and Post- two-way transactions is small, we compare In-committee returns to In-Congress returns. With the exception of the value-weighted returns, the point estimates for In-committee returns tend to be larger than In-Congress. The median excess return for In-committee transactions is 4.62%, and 3.72% for In-Congress. The average annualized return is 3.75% for In-committee, with a t-statistic of 4.12. The return falls to 2.55% with a t-statistic of 3.04 after including year fixed effects. It falls to 1.39% but remains marginally significant with a t-statistic of 1.65 after controling for market timing at the state level.

One concern with this analysis is that by limiting the sample to transactions with purchases and sales that occur while a Congress member is in a powerful committees, we may skew the sample towards shorter holding periods. Shorter holding periods are usually associated with higher returns. Figure B.1 compares the holding days distribution of the transactions in committees and

[45]For the Senate these committees are Finance, Veterans Affairs, Appropriations, Rules, Armed Services, Foreign Relations, Intelligence, Judiciary, Budget, and Commerce; for the House these committees are Ways and Means, Appropriations, Energy and Commerce, Rules, International Relations, Armed Services, Intelligence, Judiciary, Homeland Security, and Transportation and Infrastructure.

[46]Data available at: http://web.mit.edu/17.251/www/data_page.html#0

in Congress. As the figure shows the two distributions are similar.

In summary we find evidence that the outperformance of Congress members while in Congress, documented in Section 3.3, improves during the time Congress members serve on a powerful committee.

B.4 Robustness analysis for intergovernmental transfers

In this section, we provide additional robustness analysis for the relationship between Congress members' property locations and intergovernmental transfers from the federal government. Following Adelino, Cunha, and Ferreira (2017), we use the Annual Survey of State and Local Government Finances data. This data is collected by the Local Government Finance Statistics Branch of U.S. Census Bureau. Every five years (years ending in '2' and '7') the U.S. Census Bureau conducts the survey of state and local government finances. In the survey years, the Bureau uses a sample of local governments that usually covers over 60% of the population within a state (Pierson, Hand, and Thompson, 2015). Census Bureau collects and reviews data at the state level, but not at the local government level (Individual Unit File). As a result, the local level data may contain non-sampling errors, which can be attributed to many sources: errors in coverage of the universe of governments, non-responses, differences in the interpretation of questions, mistakes in the recording and coding of data, and other errors in collection, processing, and tabulation of the data.[47] Because the Census Bureau has not reviewed the Individual Unit File data as separate time series, the data should be used and interpreted with caution.

Although data analysts from Census Bureau have tried to eliminate data errors in the Individual Unit File by comparing the data with audited local government financial statements, examining some values against values reported in newsletters and other reports, etc.,[48] we found that there are still large outliers in the 1-, 3- and 5-year growth rates of intergovernmental transfer from the federal government. This is shown in Table B.4 that reports the summary statistics of per-capita

[47] We thank Kristen Ricks and Craig A. Langley for their generous help in answering our questions about Local Government Finance data.

[48] The Census Bureau periodically updates data published after 2012 but does not update historical data prior to 2012.

federal intergovernmental transfers.

To address the problem of potential data errors, we provide estimates by excluding the top and bottom 1% of observations with extreme values in the growth rates of intergovernmental transfer (see Table B.5). As robustness tests, we also provide estimates by using percentile ranks of the gross growth rates of intergovernmental transfer from the federal government (see Table B.6). The results from Tables B.6 and B.5 give us more confidence in the estimates reported in Table IX.

B.5 Opportunity Zones

In this section, we investigate whether a county that has more properties owned by Congress members is more likely to be designated as Opportunity Zone (OZ). The creation of opportunity zones in December 2017, represents one of the most discussed pieces of federal economic development policy. The law provides substantial tax benefits for investing capital gains in opportunity zones and as of April 2020, over 620 Opportunity Zone funds reported raising more than $10 billion from both individual and corporate investors[49]. However, the process for selecting designated opportunity zones was widely criticized because governors had primary authority and significant discretion in choosing their respective states' qualifying zones. Given the tax benefits provided by the policy, housing markets in designated opportunity zones may experience a boom in the long run. If governors choose designated opportunity zones by taking Congress members' property locations into account, then the presence of Congress members' properties in eligible census tracts may predict the probability of a census tract becoming a designated census tract.

We obtain a list of 42,160 qualified census tracts in early 2018 from the U.S. Department of Treasury. Approximately 75% of these eligible tracts were low-income communities (LICs) based on having either (i) a poverty rate above 20% or (ii) a median household income less than 80% of the local median household income. The remaining tracts were eligible because they were contiguous

[49]Capital gains can be invested through intermediaries called Opportunity Funds. The three main benefits are: Tax on the initial capital gain is deferred until 2026 or when the asset is sold. For capital gains placed in an Opportunity Fund for at least five years, investors' basis on the original investment increases by 10%; if invested for seven years, by 15%. For investments in Opportunity Funds held for at least 10 years, the gains on the investments in the zones are not subject to capital gains tax. Funds can be invested in commercial, residential and industrial real estate; infrastructure, and businesses. For real estate projects to qualify, the investment must result in the property being "substantially improved," see Frank, Hoopes, and Lester (2022).

to a LIC tract and had relatively low household income. A total of 8,764 census tracts were selected as designated opportunity zones. We exclude census tracts with less than 50 households.

We measure the likelihood that Congress members' properties ownership influences the selection of opportunity zones by estimating the following linear probability model at the census tract level:

$$\begin{aligned} \text{Designated} \quad = \quad & \beta_1 \text{CongressHousingOwership}_{2017} + \beta_2 \text{Poverty Rate} + \beta_3 \text{Median HH Income} + \\ & \beta_4 \text{MSAIncome} + \beta_5 \text{StateIncome} + \epsilon \end{aligned} \tag{B.1}$$

The dependent variable Designated is an indicator variable equal to 1 if the census tract was selected as an opportunity zone, and 0 if the census tract was qualified but not selected as an opportunity zone. $\text{CongressHousingOwership}_{2017}$ is a dummy variable which is equal to 1 if there is at least one active Congress member's property in an eligible census tract. We have 998 properties held by active Congress members by the end of 2017. However, only 312 properties are located in eligible census tracts and 50 are located in designated census tracts.

Since the connection between a Congress member and a governor may be stronger if they are in the same party, we also analyze if the housing ownership of Congress members who are in the same party as the state governor predicts the choice of designated opportunity zones. In our sample, Congress members who are in the same party as the governor own 29 out of 50 properties in designated opportunity zones and 160 out of 312 properties in eligible opportunity zones.

We control for poverty rate and median census tract household income because these reflect the statutory requirements that defines eligible census tracts. The inclusion of these measures permits assessment of whether governors were more likely to pick even more distressed communities from the eligible pool of already low-income tracts. We measure these variables using the same 2011–2015 American Community Survey (ACS) data used by the Treasury to identify eligible tracts. We also control for MSA level income and state level income.

Table B.7 shows the regression results. We find little evidence that Congress member ownership influences the Opportunity Zone decision. The coefficients on Congress member ownership are

positive, but not statistically significant. Hence, it appears unlikely that Congress members enrich themselves by directing tax benefits to the neighborhoods where they own real estate properties.

Figure B.1: Distribution of holding days

This figure shows the holding days distribution of transactions of U.S. Congress members while in Congress and while members of powerful committees.

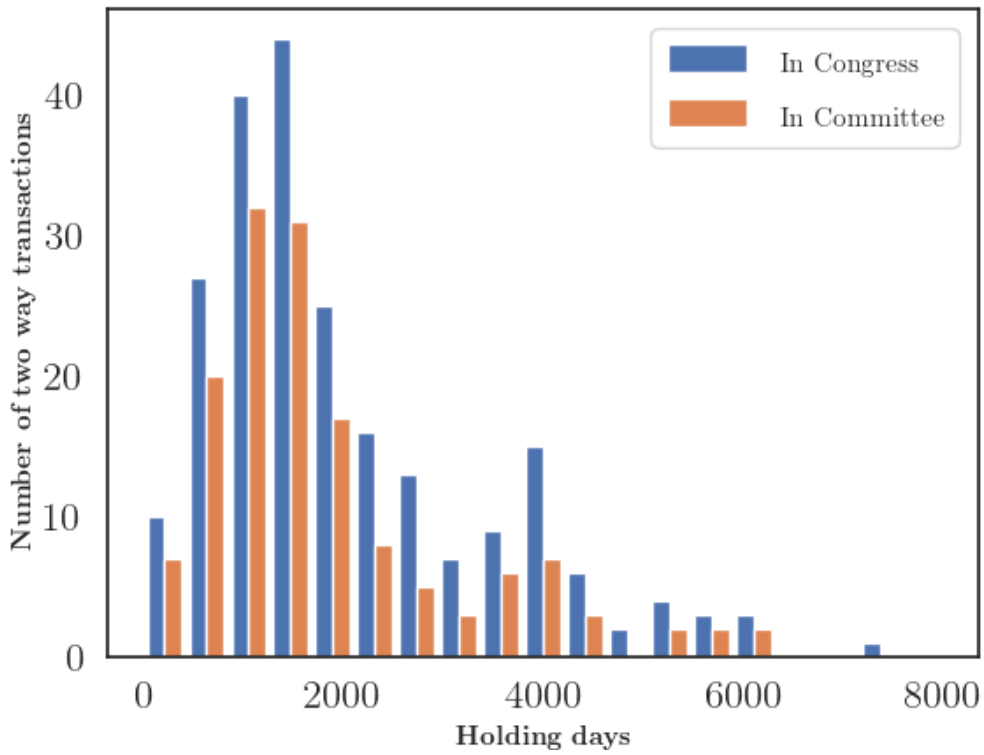

Table B.1: Investment property vs. Primary residence

This table presents estimates of Congress member excess returns from real estate transactions that involve primary residences or investment properties. Panels A and B present the spread between the median and value-weighted return of Congress members, r_c, and of the control benchmark, r_b, with bootstrapped p-values. Panels C–E presents regressions estimates of the coefficient β on the Congress dummy variable in equation (2). We drop observations that cannot be classified as either investment property or primary residence due to lack of information.

	Primary Residence	Investment Property
	Panel A: Median excess return	
$r_c^{\text{med}} - r_b^{\text{med}}$	0.0037	0.0084
p-val	0.235	0.038
	Panel B: Mean VW excess return	
$r_c^{\text{vw}} - r_b^{\text{vw}}$	0.0197	0.0129
p-val	0.069	0.127
	Panel C: Mean EW excess return, No fixed effects	
β	0.0103	0.0154
t-statistics	2.11	2.51
	Panel D: Mean EW excess return, Year fixed effects	
β	0.0099	0.0167
t-statistics	2.06	3.05
	Panel E: Mean EW excess return, Year × State fixed effects	
β	-0.0015	0.0131
t-statistics	-0.37	2.40
N (Congress)	273	367
N (All)	24,972,178	24,972,178

Table B.2: Congress members' characteristics

This table reports the regression results of log annualized returns of Congress member two-way transactions on Congress member characteristics, property characteristics and transaction characteristics. Congress member characteristics include Congress member party, chamber, education background, gender, age and wealth. Property characteristics include property location, building area sqft, number of bedrooms and bathrooms, year built. InDistrict is 1 if the property is in Congress members' Congressional district. WealthLevel_k is equal to 1 if the average estimated wealth level across time of a Congress member is in the bottom k_{th} tercile, $k = 1, 2, 3$. Column 1 considers Congress characteristics, property location and holding days of the property. Column 2 adds property characteristics controls. Column 3 adds Congress member wealth level controls. Column 4 and column 5 splits the sample into primary residences and investment properties, respectively. *,**, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

	Dependent variable: Log Congress Members' annualized two-way returns				
	(1)	(2)	(3)	(4)	(5)
Republican	0.005	0.006	0.002	0.005	0.0002
	(0.008)	(0.009)	(0.010)	(0.012)	(0.017)
DSenator	−0.010	−0.007	−0.010	−0.002	−0.019
	(0.012)	(0.013)	(0.015)	(0.017)	(0.026)
GraduateDegree	−0.012	−0.013	−0.014	0.00002	−0.030*
	(0.008)	(0.009)	(0.010)	(0.013)	(0.016)
Female	0.004	0.002	0.011	0.015	0.015
	(0.011)	(0.011)	(0.012)	(0.015)	(0.021)
BuyAge	0.0002	0.00005	−0.0001	−0.0003	0.0004
	(0.0003)	(0.0003)	(0.0004)	(0.001)	(0.001)
InDistrict	−0.009	−0.011	−0.007	−0.014	0.0003
	(0.009)	(0.009)	(0.011)	(0.013)	(0.018)
HoldingDays	−0.00001***	−0.00001***	−0.00001***	−0.00001*	−0.00002***
	(0.00000)	(0.00000)	(0.00000)	(0.00000)	(0.00001)
YearBuilt		−0.0001	−0.0001	−0.0001	−0.0001
		(0.0001)	(0.0001)	(0.0002)	(0.0003)
BuildingAreaSqFt		−0.00000*	−0.00000*	0.00000	−0.00000*
		(0.00000)	(0.00000)	(0.00000)	(0.00000)
Num bedrooms		−0.004	−0.003	−0.003	−0.007
		(0.009)	(0.010)	(0.011)	(0.019)
Num bathrooms		0.005	0.006	0.009	0.004
		(0.009)	(0.010)	(0.011)	(0.019)
WealthLevel_1			0.014	0.027*	−0.011
			(0.013)	(0.014)	(0.023)
WealthLevel_2			0.015	0.003	0.013
			(0.013)	(0.015)	(0.022)
WealthLevel_3			0.020	0.028	−0.007
			(0.014)	(0.023)	(0.022)
Observations	640	504	419	199	220
Adjusted R^2	0.044	0.046	0.048	−0.003	0.092

Table B.3: Excess returns and powerful committee membership

This table presents estimates of active Congress member excess returns from real estate transactions. Active Congress member transactions are broken down into three categories: returns earned before joining powerful committees, while in powerful committees, and after powerful committees. Panels A and B present the spread between the median and value-weighted return of Congress members, r_c, and of the control benchmark, r_b, with bootstrapped p-values. Panels C–E presents regressions estimates of the coefficient β on the Congress dummy variable in equation (2).

	In-Congress	Pre-Committee	In-Committee	Post-Committee
Panel A: Median excess return				
$r_c^{\text{med}} - r_b^{\text{med}}$	0.0372	0.0275	0.0462	-0.021
p-val	0.000	0.262	0.000	0.708
Panel B: Mean VW excess return				
$r_c^{\text{vw}} - r_b^{\text{vw}}$	0.0331	0.1020	0.0253	0.0259
p-val	0.017	0.055	0.059	0.406
Panel C: Mean EW excess return, No fixed effects				
β	0.0324	-0.0083	0.0375	0.0289
t-statistics	4.26	-0.13	4.12	0.57
Panel D: Mean EW excess return, Year fixed effects				
β	0.0217	-0.0619	0.0255	0.0019
t-statistics	3.11	-1.02	3.04	0.10
Panel E: Mean EW excess return, Year $\times$ State fixed effects				
β	0.0099	-0.0614	0.0139	-0.0194
t-statistics	1.43	-1.24	1.65	-0.79
N (Congress)	185	5	141	3
N (All)	24,972,178	24,972,178	24,972,178	24,972,178

Table B.4: Intergovernmental Transfer from Annual Survey of State and Local Government Finances: Summary statistics

This table reports the summary statistics of raw data from the Annual Survey of State and Local Government Finances. We focus on the amount and gross growth rates of intergovernmental transfer from federal, state and local government. The sample period is 1994 - 2017.

	count	mean	std	min	25%	50%	75%	max
Net IGR Federal (000s)	47,715	5,696.71	62,031.24	0	0	295	1,954	37,94551
Net IGR State (000s)	47,715	41,208.85	235,647.03	-80,675	1,818	5,749	22,308.5	10,615,609
Net IGR Local (000s)	47,715	-1,047.37	22,599.29	-63,0979	-570	0	223	775,984
Net IGR Federal, Per Capita	47,630	0.04	0.19	0	0	0.01	0.04	7.86
Net IGR State, Per Capita	47,630	0.34	0.55	-1.11	0.08	0.17	0.37	27.94
Net IGR Local, Per Capita	47,630	-0.01	0.11	-3.75	-0.02	0	0.01	4.11
1 Year Growth of Net IGR Federal Per Capita	30,115	3.13	34.66	0	0.71	1	1.31	3,933.51
3 Year Growth of Net IGR Federal Per Capita	28,069	5.74	73.57	0	0.49	1	1.71	8,130.24
5 Year Growth of Net IGR Federal Per Capita	26,306	8.04	180.94	0	0.37	1.01	2.03	26,578.74

Table B.5: Congress members' property holding and future federal transfer: excluding outliers

This table reports the results of regressing the future 1-, 3-, and 5- year growth rates of per capita net intergovernmental transfer from the federal government on the number of Congress members' property holdings in a county. We exclude the top and bottom 1% of outliers in the growth rates of per capita net federal intergovernmental transfer. Panel A includes all counties. Panel B includes counties in the top tercile based on population. County level controls include per capita income, population, unemployment rate, fraction of white, fraction of female, fraction of population over 65, fraction of population below 16, and fraction of employment computed at the 4-digit industry classification level from Quarterly Census of Employment and Wages (QCEW). County and year fixed effects are included and standard errors are clustered at the county level. *,**, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: All counties			
	1 Year	3 Year	5 Year
Number of Properties	0.0009***	0.0047***	0.0080**
	(0.0003)	(0.0014)	(0.0034)
Fit statistics			
Observations	27,767	24,824	22,533
R^2	0.1059	0.1635	0.1824
Fixed-effects			
County	Yes	Yes	Yes
Year	Yes	Yes	Yes
Controls			
County demographics	Yes	Yes	Yes
County industry structure	Yes	Yes	Yes
Panel B: Counties in top tercile by population			
	1 Year	3 Year	5 Year
Number of Properties	0.0008***	0.0031**	0.0063**
	(0.0003)	(0.0013)	(0.0030)
Fit statistics			
Observations	15,747	14,194	12,311
R^2	0.0822	0.1309	0.1721
Fixed-effects			
County	Yes	Yes	Yes
Year	Yes	Yes	Yes
Controls			
County demographics	Yes	Yes	Yes
County industry structure	Yes	Yes	Yes

Table B.6: Congress members' property holding and future federal intergovernmental transfer: rank regressions

This table reports the results of regressing the rankings of future 1-, 3-, and 5-year growth rates of per capita net intergovernmental transfer from the federal government on the number of Congress members' property holdings in a county. Panel A includes all counties. Panel B includes counties in the top tercile based on population. County level controls include per capita income, population, unemployment rate, fraction of white, fraction of female, fraction of population over 65, fraction of population below 16 and fraction of employment of 4 digit high level industry classification from Quarterly Census of Employment and Wages (QCEW). County and year fixed effects are included and standard errors are clustered at the county level. *,**, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Panel A: All counties			
	1 Year	3 Year	5 Year
Number of Properties	0.0002**	0.0004**	0.0005**
	(0.0000)	(0.0002)	(0.0002)
Fit statistics			
Observations	29,701	27,683	25,951
R^2	0.0893	0.1933	0.2638
Fixed-effects			
County	Yes	Yes	Yes
Year	Yes	Yes	Yes
Controls			
County demographics	Yes	Yes	Yes
County industry structure	Yes	Yes	Yes
Panel B: Counties in top tercile by population			
	1 Year	3 Year	5 Year
Number of Properties	0.0003**	0.0005**	0.0005***
	(0.0001)	(0.0002)	(0.0002)
Fit statistics			
Observations	16,498	15,656	14,204
R^2	0.0486	0.1186	0.1770
Fixed-effects			
County	Yes	Yes	Yes
Year	Yes	Yes	Yes
Controls			
County demographics	Yes	Yes	Yes
County industry structure	Yes	Yes	Yes

Table B.7: Designated opportunity zones and Congress members' housing ownership

This table reports coefficient estimates from the regression in equation (B.1).the regression results of designated opportunity zone dummy on Congress housing ownership and census tract demographics. The dependent variable *Designated* is indicator variable equal to 1 if the census tract was selected as an opportunity zone, and 0 if the tract was qualified but not selected as an opportunity zone. $\text{CongressHousingOwership}_{2017}$ is a dummy variable which is equal to 1 if there is at least one Congress member property in an eligible census tract. The column 'In OZ All' shows the regression result using all Congress members' properties. The column 'In OZ Same party' shows the regression result using only Congress member properties whose owners are in the same party as governors. We control for median household income and poverty rate at the census tract level and also MSA level and state level income. *,**, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

	In OZ All	In OZ Same party
$\text{CongressHousingOwership}_{2017}$	0.0194	0.0198
t-stat	0.83	0.66
Poverty Rate	0.0056***	0.0056***
t-stat	17.57	17.56
Median HH Income	-0.1982***	-0.1982***
t-stat	-18.14	-18.14
MSA Income	-0.029***	-0.029***
t-stat	-6.05	-6.04
State Income	0.2668***	0.2669***
t-stat	17.25	17.26
R^2	0.1133	0.1132