The Impact of Credit Scores on the Overpayment of Rent as a Means to Obtain Shelter

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Abstract

Dramatic increases in home prices and rents during 2021 have highlighted the importance the rental market in providing shelter, especially for low- to moderate-income households. Although daily experiences suggest that home prices and rents are positively correlated with one another and with credit scores, just how the two housing cost measures move as scores change has not been empirically tested. The data didnǾt exist until recently. At a CBSA level, data across cities show a wide distribution of the cost of renting relative to the cost of buying a three bedroom property (the rent versus buy ratio, or ñRVBò). This paper uses across-city data to estimate the impact of credit scores on RVB. After accounting for differences in the relative cost of living, incomes of the population, investor shares of purchases, landlord shares and vacancy rates across CBSA, my empirical results show that for each one unit decline in credit score, the RVB ratio go up by an average 50 bps in the three bedroom market. The lower the householdǾs scores, the more wealth is transferred from the renter to the landlord each month exacerbation wealth inequality in the nation.

Key words: housing, rental markets, housing investors, household wealth, equity
Economic Literature Codes: R0, R31, D14, D63

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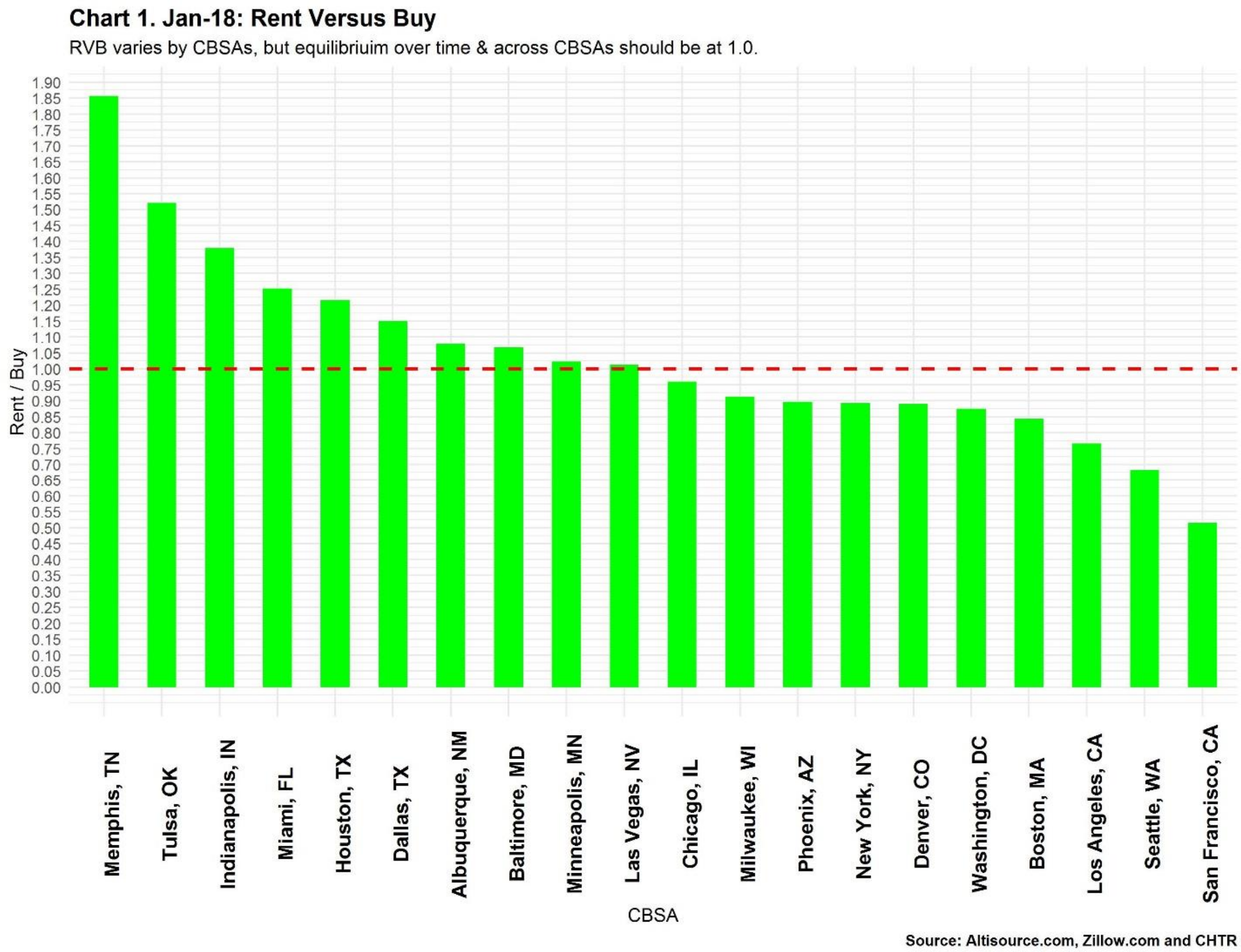
1. Background

It is widely known that in some cities in America, it is cheaper to buy than rent. Chart 1 shows a ratio of renting versus buying during Jan-18. In that month, it was cheaper to rent than own in roughly six of 20 core-based statistical areas (CBSAs). Renting (R) and owning (B) are two different ways to obtain shelter. The rents are median rents and the cost of owning is based upon the median home price for three bedroom residential properties.



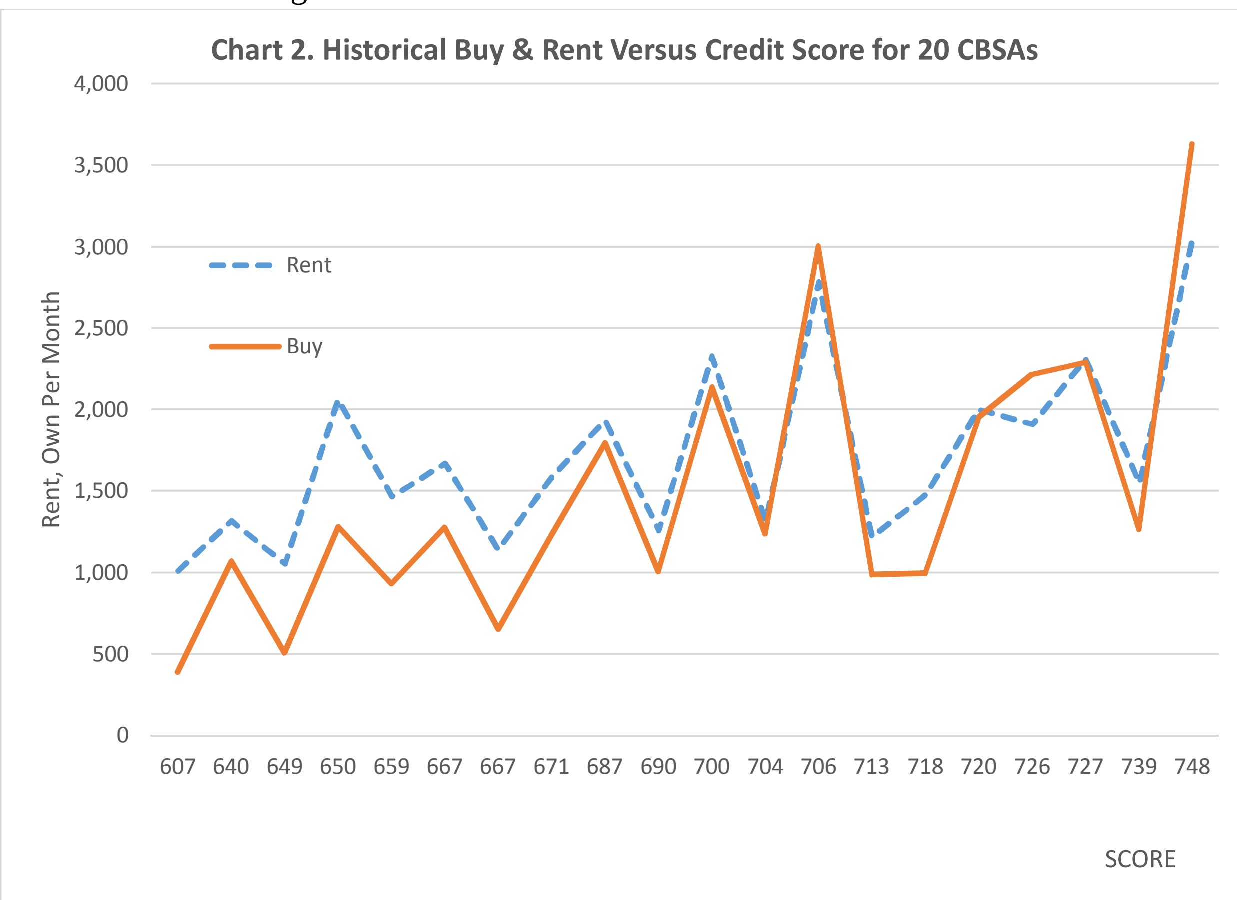
The reason a household might be forced to rent, even if it is cheaper to buy, is often that a householdôs income is too low to get a downpayment together or if the householdôs credit score were too low to apply for mortgage. Or, both.[1]

In cities on the left-hand of Chart 1, investors step into the market to provide shelter to these households. Households that rent transfer wealth to the investor each month in exchange for a given quantity of shelter. If the property investor lives outside of the CBSA

[1] The author recognizes other reasons exist to rent: Renters enjoy the freedom of mind to not have to pay for maintenance. Some renters might have the financial wisdom to put the entire downpayment into stocks. Owning a house also involves taking on the risk of price depreciation. Renter in some high-cost CBSAs may have found a deal.

then wealth is transferred out of the CBSA and acts as wealth drain on the CBSA. Chart A1 in the appendix shows that a rising share of home sales are purchase by larger investors. On the other hand if the renter had purchased the house, they could consume the same quantity of shelter (live in a three bedroom property) and would build wealth. The impact of low incomes and weak credit scores on the rate of wealth loss by households has not been studied in a systematic way because a long history of CBSA-level rental price data never existed until currently.[2]

Mortgage lenders will lend more money for bigger houses if the borrowerĝs credit score is high enough. Chart 2 suggests that this is also true for rents -- landlords might rent better properties and charge more to renters with good scores than to renters with poor scores. Thus median home prices and rents move with scores in Chart 2. Chart 2 however is a bivariate analysis. Other things are happening which are not captured by the chart and thus it could be misleading.



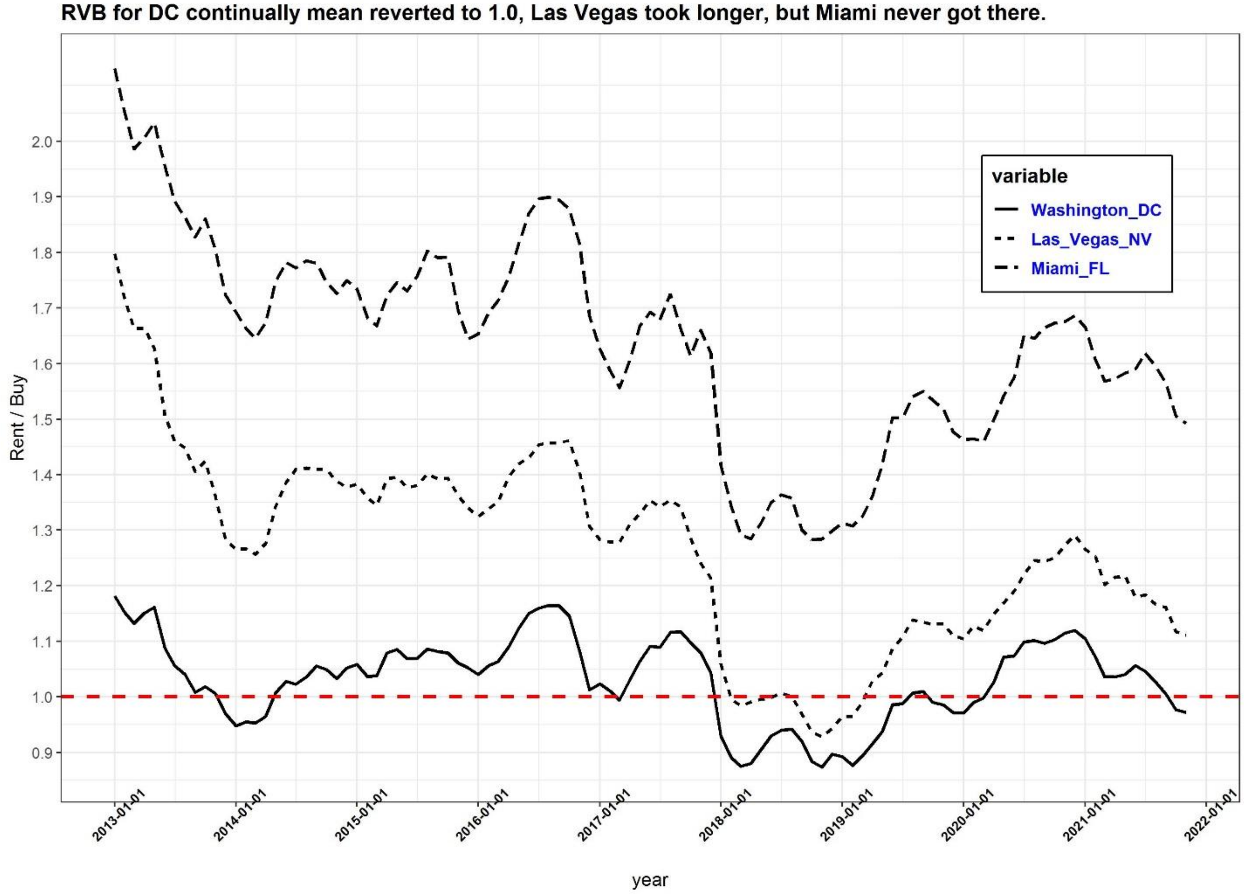
In Charts 1 and 2, I compare an average of owners against an average of renters by CBSA and use the average credit score of the CBSA. Ideally one could build a similar chart using

[2] Sometime around 2010, both Zillow.com and Altisource.com started tracking and offering CBSA level rents.

property-level data for households within a CBSA. There are three impediments to this idea: First, although one could obtain prices, property characteristics, credit scores, property tax rates, income tax rates on the individual property level from deed data one cannot do that for renters. Data on scores and rents etc., for individual renter households are not stored by any one institution because the rental market is largely a system of small investors. The data does not exist. Researchers have no ability to match credit score to rents. Second, data for owner occupied households and renter households if it were available at the household level would have to be matched by property quality, geography and score to provide an apples-to-apples comparison. To build a panel dataset for research I would still need to match an average for owners against an average for renters. I would still need to take an average at a given credit score and compare the average renting household with a given score in a given geography to the average owner occupied household with the same score. Such an approach, would be near-identical to that using CBSA-level data, but at the more granular level. Third, as described above, Chart 2 is a bi-variate analysis in which other factors influencing renting and owning are ignored. I also need the investor share of purchases, landlord shares and vacancy rates that are readily available at the CBSA-level.

Chart 3. RVB for Las Vegas, NV, Washington, DC and Miami, FL

RVB for DC continually mean reverted to 1.0, Las Vegas took longer, but Miami never got there.

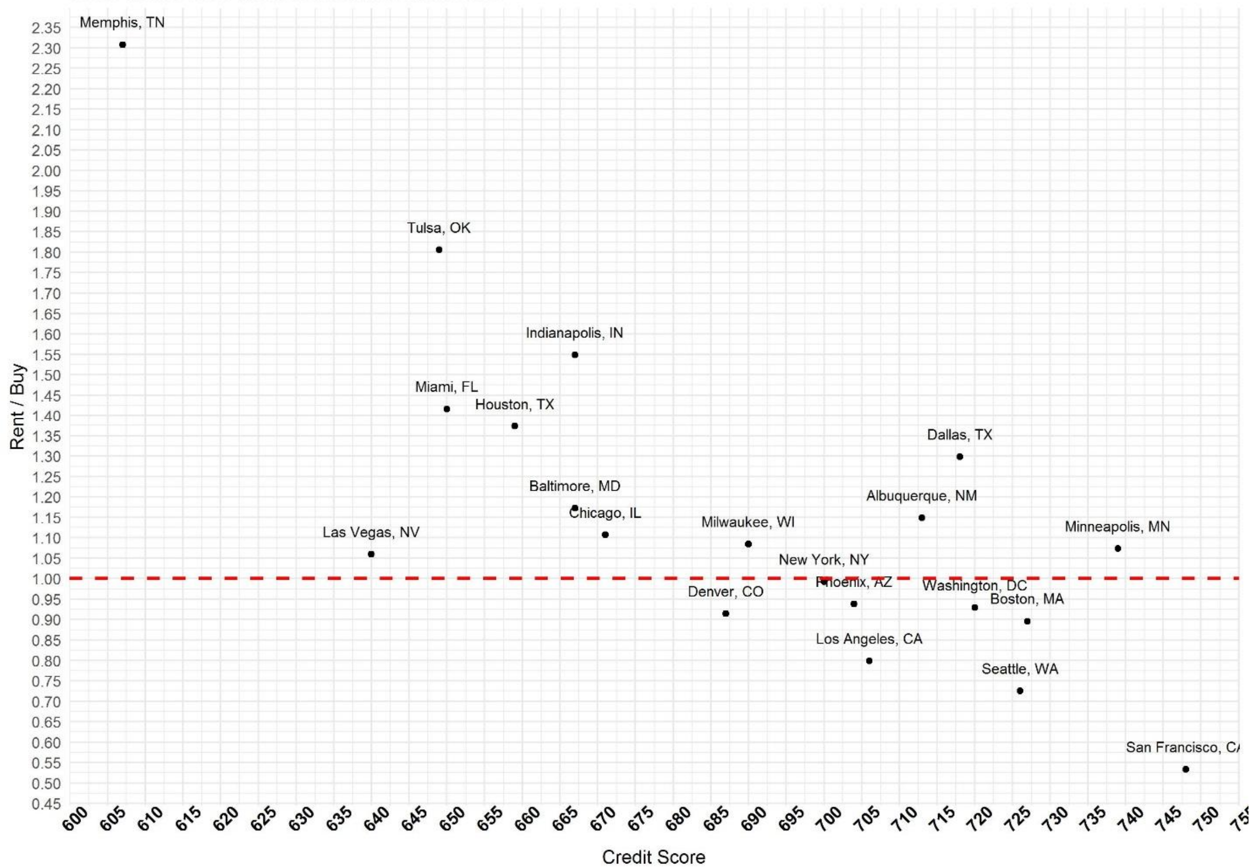


Sources: Zillow.com, Altisource.com, CHTR

Chart 3 shows a chart of BVR over time. In Chart 1, Las Vegas, NVôs RVB on Jan-18 was almost exactly 1.0, exactly as theory would predict ï the cost of renting should equal the cost of owning. However Chart 3 shows that, after the financial crises of 2007 to 2010, it took time for the RVB (dotted line) to mean revert to 1.0. We also see that the RVB for Washington, DC (solid line) bounced around 1.0 for a period of five years but continuously reverted near 1.0 (mean reversion) until Jan-18 when the Federal Reserve began a series of interest rate hikes which made the denominator larger. We also see that RVB for Miami, FL never gets near 1.0. Chart 3 shows me that I need to control for all factors across time because BVR changes over time.

Chart 4: Jan-18 Credit Scores of Renters and RVB

Lower credit scores are associated with wider RVBs



Source: Altisource.com, Zillow.com, Equifax, and CHTR

An additional static snapshot gives me some idea of the relationship I am trying to estimate. In Chart 4 we see a negative relationship between RVB and scores. I will use panel data extending from Jan-13 to Mar-21 on twenty CBSAs in my data sample with varying credit scores, prices and rents. I am arguing that by modeling the relationship between score and BVR across CBSAs after controlling for other factors, I am able to approximate the relationship between score and BVR for any households in any given CBSA. This is useful because it give us a systematic way to measure how credit score impede markets from clearing and makes this paper unique. My central goal is determine the lost wealth per unit of credit score that can be attributed to renting.

This paper is organized as follows: Section 2 presents theory and reviews prior research on owning and renting. In Section 3, I explain the data collection process and data sources. Section 4 introduces three models, my results and an application of the results onto the average renter. The last section is my conclusion.

2. Theory and prior research, CBSA-level data

2.a The user cost of capital (UCK)

In modelling home prices and rents, one has to go back to Poterba (1984) who develops the home buying/rent decision in terms of a user cost of capital. The cost of buying a house with a price of P can be written as the price times the user cost of capital (P * UCK), or

$$P * UCK = P * ([k + \tau_p + m - E(\pi)] - [(k + \tau_p) * \tau_f]) \qquad (1)$$

Where P is the home price; k is the mortgage rate; τ_p is the property tax rate, a tax payment relative to house price; m is the maintenance cost, $E(\pi)$ is the expected home price appreciation and τ_f is the federal tax rate. Poterba argues that in equilibrium, the entire cost of owing (buying) must equal the cost of renting an identical house. Or, for every city, markets adjust until,

$$R_{it} = UCK_{it} * P_{it}, \quad \text{or } R_{it} = B_{it}, \qquad (2)$$

The housing and rental markets at time t do seem to function in major cities nearly in the classical framework of perfect competition. Marginal buyers and sellers have access to a very large information set, and can substitute (at the time immediately before the transaction, time t) without costs between renting and buying.[3] A potential buyer of a home faces the choice outlined by Equation 2, (the rent/buy decision). And if we think of each CBSAs as being an economic agent, home prices should adjust upward under higher demand until the R_{it}/B_{it} approximates 1.0. Markets in every city over time adjust until R_{it}/B_{it} = 1.0, barring an external shock. This relationship between B and R introduces an error correction term into the long-run market framework and is a form of dynamics. Chart 3 introduces the idea that ñthings get in the wayò which prevent mean reversion.

[3] The author recognizes that the supply curve is very inelastic and varies considerably by CBSA potentially violating the idea of perfect competition. Also homebuyers (investors and owner occupiers0 are not homogeneous

2.b Long-run models of housing

Earlier studies of house prices using a variety of methodologies and covering many time periods, countries and cities have found evidence of serial correlation and mean reversion. These characteristics are a pervasive and ubiquitous feature of housing. See Abraham and Hendershot (1996), and Capozza, Hendershott and Mack (2004), and Fout, Haidorfer and LaCour-Little (2018). Underlying the concept of mean reversion is the basic notion that in the long-run, market tend towards equilibrium. It is reasonable to assume that in each time period t, and in each CBSA, that there is a long-run equilibrium value for the unit price of a house that that it is determined by economic conditions, or $P_{it}^* = f(\mathbf{X}_{it})$, where P_{it}^* is the equilibrium price of a house and $\mathbf{X}_{it}$ is a vector of explanatory variables. This relationship can be viewed as a reduced form arising from a supply-and-demand relationship. Thus an equilibrium relationship exists between P_{it}^* and $\mathbf{X}_{it}$, and the values of P_{it}^* can be thought of arising from fundamentals. If P_{it} is below P_{it}^* then P_{it} must adjust upward (mean revert). Researches often estimates a long-run log linear inverse demand function such as,

$$\ln P_{it} = \text{const} + \text{Ŭ}\mathbf{X}_{it} + \text{Ů}_{it} \quad (3)$$

Some research have argued that all of the information contained in the variables included in $\mathbf{X}_{it}$ in Equation 3 is contained in R_{it} (Gallin, 2006 and 2008, Kuttner, 2011, Verbrugge, 2008 and Fout, Haidorfer and LaCour-Little, 2018). Under that assumption, a long-run inverse demand function for housing is stated as,

$$\ln P_{it} = \text{const} + \text{Ŭ}\ln R_{it} + \ln UCK_{it} + \text{Ů}_{it} \quad (4)$$

For my purposes, I will include the UCK in the buy variable (B) and specify the long run model as,

$$\ln B_{it} = \text{const} + \text{ŭ} \ln R_{it} + \text{Ů}_{it}, \quad (5)$$

and reversing the causality as,

$$\ln R_{it} = \text{const} + \text{ŭ} \ln B_{it} + \text{Ů}_{it} \quad (6)$$

Additionally, one could think of a model which tracks how B and R move together, or

$$RVB_{it} = \text{Ŭ}1.0 + \text{Ů}_{it} \quad (7)$$

RVBs should be very close to 1.0, so on average Ŭ in Equation 1 should be close to 1.0. Again, all of my curves clearly show that this has not always been the case. Housing markets in some U.S. cities do not function as expected. There is violation of the mean reversion. Market friction inhibits market dynamics. Before I estimate a more detailed specification of each of these three models, I outline potential market friction.

2.c. Urban characteristics as friction

Chart 2 shows that some cityôs prices and rents adjust slowly over time to R/B not being near 1.0 (Las Vegas, NV). Indeed, we have witnessed through time that housing adjusts slowly to exogenous shocks. Some of this slow adjustment can be attributed to market friction. Extending the idea of disequilibrium, Di Pasquale and Wheaton (1994) argue that product heterogeneity and costly search lead to a slow clearing in the housing market. Specifically, if the housing market is in equilibrium and a shock occurs, this creates a form of the disequilibrium mentioned above, causing a wedge between the equilibrium price (P_{it}^*) and the actual price level (P_{it}) due to such rigidities.

On the supply side, if the demand for housing is greater than the existing supply, a positive wedge would appear between actual price of housing and the equilibrium price. House prices being higher than what they should be, should bring on additional supply. But new housing supply comes on very slowly as it takes time for builders to adjust and try to estimate time lines of supply. CBSAs are, of course, heterogeneous. Some have limited amounts of buildable land or there are severe zoning rules. In these markets, higher prices do not bring about a significant amount of new construction. So a homebuyer might be rational paying too high a price because he recognizes (expects) price gains to exceed income growth. This is then a bet that now is better than later, because later might never come. These individuals might also see the long term potential of such urban cores.[4] These transactional and geographical frictions certainly exists, but are difficult to measure precisely over time.[5] Using rental properties obviates the need for estimating CBSA spatial allocations of properties.

2.d Credit scores as friction

Renters also are heterogeneous. In addition to search costs, there are hard constraints on renters: difficulty gathering a down payment, unstable incomes, and impaired credit, among others. It is not just the price of the house, but also the ability of the renter to get into the house. This is the reason I focus on the buy variable (B) instead of P. The variable B is at least a reasonable estimate of the user cost of housing incorporating the effect of interest rates and property tax rates on the buying decision. If (R_{it}/B_{it}) > 1 (or, $R_{it} - B_{it} > 0$)

[4] See Glaeser and Gyourko (2005).
[5] See Gyourko Joseph, Jonathan Hartley & Jacob Krimmel (2019).

as it has been in Miami, FL for over 10 years then it is cheaper to own than to rent and the rational would-be renter should choose to buy rather than rent and home prices should rise. The decision maker in this paper is the would-be buyer (the renter) right before he decides to own or rent (it could also be any investor right before he decides to purchase a rental property) each month. Conceptually, I ascribe to each CBSA the decision making ability of the household and vice-a-versa. Could it be that buyers in Miami, FL were/are irrational? Chart 3 below suggests that the reason R/B remains significantly above 1.0 is not that renters in Miami, FL are irrational, it is that their average credit scores are weak. The CBSAs which have the lowest credit score in Chart 3 are often CBSAs with RVBs that do not approach 1.0, i.e., their housing markets operate in a state of long-run steady-state disequilibrium.

2.e Investor share of new purchases as friction

There, however, is another force going on. It is not just the negative impact of weak scores. Moving from right to left in Chart 4, credit scores decline. As credit scores decline, renters lose bargaining power which in turn gives landlords, who have an ability to raise rents more pricing power. Thus moving from right to left, rents fall slower than home prices and RVB increases. It could be that landlords take advantage of the renterȏs weakened borrowing and purchasing power. Investors in single family detach rental properties are more prevalent in CBSAs with households which have low credit scores and low incomes.[6] The low scores and low income might preclude individuals from buying a home (even if it is cheaper to own rather than rent). Thus it could be that landlords and new investors fill the gap between the need for shelter by renters and the inability to buy a home. Investor perform a positive function, but they extract a slice of social welfare and possibly charge excessive rents if market concentration become high enough.

Thus there are at least four sources of friction to RVB adjusting freely: 1) high transaction costs: 2) some geographies do not have buildable land; 3) potential homebuyers do not have access to credit; 4) investor exercise more bargaining power than renters.

2.f Other confounders

I also consider the impact of income, vacancy rate and home ownership rates in a CBSA. Because I am estimating a long-run model where my dependent and independent variables are in levels, and because I cannot account for transaction costs, and other unobserved fixed-effects confounder, I estimated a fixed-effect model.

[6] See Haidorfer (2022b)

3. Data

Economic and property data by CBSA are widely available. By merging data on income and credit scores to prices and rents, I consider each CBSA as an economic agent much like a person with a demand function to either buy or rent. The periodicity of the data is monthly except where noted. The variables that I use in the three models are:

3.a Home prices: Home price data are median prices on three bedroom properties. Source: Zillow.com

3.b Rents: Rent data are median rental rates on three bedroom single family detached properties. Source: Altisource.com

3.c A user cost of capital, and mortgage rates: As specified in Equation 1, the user cost of capital is largely driven by the 30 year mortgage rate (k), property taxes (Ǘ$_p$) and federal income tax rates (Ì $_f$). The mortgage rate is the 30 year FRM from Freddie Mac. Maintenance cost (m) for the UCK are estimate to be 3.5 percent per year for a three bedroom property for all 20 CBSAs. I assume that the homebuyer uses a 100 percent LTV mortgage. I make no attempt to estimate E(´).[7]

3.d Property and income taxes: Property tax rate are calculated for each CBSA for each month. The IRS reports the average property tax amount paid each year for each income cohort. The property taxes here are from the cohort of adjusted gross income from $50k to $75k which I felt to be a good match to homebuyers of three bedroom properties. I divide the IRS data on average yearly property taxes paid by the median price of the home each month to get a property tax rate (PTR) each month. Since the property prices are reported monthly, the calculated property tax rate have a monthly periodicity. The federal income tax rate for each CBSAs is based on the combined IRS reported amounts of federal income tax receipts for all households in a CBSA with adjusted gross income between $50k to $75k divided by the number of reported households in that bracket.[8] The result is a federal income tax rate with an annual periodicity. Source: IRS Report of Income.

3.e Average credit score of all households: The credit score of both renters and owners in $CBSA_i$ are for the year 2019. The value for a CBSA obtained for 2019 is used for all time periods. The values are thus static across time. Source: Equifax.

[7] The notion that renters, homebuyers or investors have expectations that are known and possibly measureable is a very strong assumption with no empirical justification.
[8] The IRS data is only for those who itemize. Tax data on those taking the standard deduction are thus not included.

3.f Average personal income: Income is the average personal income. The data come from weekly earnings reported by the BLS. Periodicity: monthly.

3.g Landlord share of existing homes: The landlord share is ($Llord_i = 1 - HOR_i$). Where HOR_i is the homeownership rates, a ratio of the housing stock. The denominator includes the total number of units (rented and owned) in $CBSA_i$. Thus the denominator includes apartment units rented, single family detached units (properties) rented and properties owned and occupied. The numerator are just units owned. Source: Census, Periodicity: quarterly.

3.h Investor share of purchases

Investor shares are counts of properties purchased by investors divided by the total number of homes purchased in that CBSA that month. An investor property is determined if the primary address of the owner is different from the address of the property. The data does include second homes which could not be factored out. Source: Corelogic, Periodicity: monthly.

3.i Vacancy rate: Vacancy rate for all properties in a CBSA. Source: Census, Periodicity: quarterly.

I have twenty CBSAs in my data sample. All data extends from Jan-13 to Mar-21. This gives me 1980 observations for my data sample. See Summary Table 2 in the Appendix for data on three bedroom properties.

4. Model and results

4.a Three long-run models,

I specify a long-run model of the RVB ratio as,

$$\ln(RVB)_{it} = \beta_1\, SCORE_{it} + \beta_2\, INC_{it} + \beta_3\, Llord_{it} + \beta_4\, Inv_{it} + \beta_5\, Vac_{it} + e_t. \qquad (8)$$

A long-run model of rent (R) as,

$$\ln R_{it} = \gamma_1\, SCORE_{it} + \gamma_2\, INC_{it} + \gamma_3\, Llord_{it} + \gamma_4\, Inv_{it} + \gamma_5\, Vac_{it} + \gamma_6 \ln B_{it} + e_t, \qquad (9)$$

and a long-run model of buy (B) as,

$$lnB_{it} = ŭ_1\, SCORE_{it} + ŭ_2\, INC_{it} + ŭ_3\, Llord_{it} + ŭ_4\, Inv_{it} + ŭ_4\, lnR_{it} + e_t. \qquad (10)$$

Where, RVB_{it} is the median rent divided by the median price of home; B_{it} is the calculated buy variable (or B=P * UCK); R_{it} is the median household rent; $SCORE_{it}$ is the average credit score; INC_{it} is the average pre-tax individual income; $Llord_{it}$ is the landlord share of existing homes; Inv_{it} is the investor share of purchases; VAC_{it} is the vacancy rate for detached properties. Since UCK which is used to calculate B includes both the mortgage rate and property tax rates, Equation 8 captures both R and B adjusting over time as mortgage rates and property tax rates change given each CBSAôs static credit score before the change. It captures how R/B adjusts to both external shocks, mean reversion and internal CBSA market dynamics. The goal is to estimate the impact of credit score changes on the change in rents relative to buying, holding as many other things as possible constant. Each CBSAs is different. Explicit possible confounders to credit scores are personal income (as a measure of credit worthiness), landlord share of homeownership rates in each CBSA, investor purchases of rental properties and vacancy rates.

Low credit scores retard the response to mean reversion or external shocks. The anticipated sign on $ϐ_1$ is thus negative. Lower incomes, similar to low credit scores, indicate renters have less ability to buy or move to another CBSA (the sign on $ϐ_2$ in Equation 8 should be also be negative).

The impact of the landlord shares of housing stock and of the investor share of purchases on RVB was not known apriori because RVB is a ratio. However it was expected to be positive for rents (i.e. $ɔ_3 > 0$, and $ɔ_4 > 0$). One can also think of the landlord share of properties as investors already existing in the market, as it is the inverse of the home ownership rate. More landlords means fewer homeowners. As the landlord share rises, or in other words, as the proportion of the existing residential housing stock that are rental properties increases, this could give landlords in CBSAs where the housing stock is more concentrated with landlords, more market power and an ability to raise rents more than price are bid up. Or, it could increase competition among landlords and new investors driving rents down more than prices are bid up (i.e. $ϐ_3 < 0$, and $ϐ_4 < 0$).

The same loss of renter bargaining is associated with lower vacancy rates (I would expect $ϐ_5 < 0$). A lower vacancy rate mean renters have less bargaining power and should be associated with a wider RVB, but vacancy rates here also measure economic prowess across CBSAs. CBSAs which are doing better economically will have lower vacancy rates, higher prices and higher rents. The sign of $ϐ_5$ was not known apriori. Counterintuitively the sign of $ϐ_5$ turned out to be positive.

4.b Results

I am trying to quantify the impact of credit scores across markets and across time on RVB. In my sample, credit scores range from 607 for Memphis, TN to 748 for San Francisco, CA. All dependent variables are measured in logs. Scores are measured as units and thus my coefficients are semi-elasticities. The value of the β_1 coefficient is -0.005. A 1 unit drop in score raises the R/B by 50 bps. By extension, if scores drop by 20 units, the R/B increases by 10 percent. In other words, starting from an RVB = 1.0 and a score of 700, a renter with a score of 680 would pay about 10 percent more in rent relative to owning than the renter with a score of 700.

Table 1. Drivers Of R/B For SFR 3 Bedroom Detached Rental Properties

	(1)	(2)	(3)
	lnRVB	**lnR**	**lnB**
SCORE	-0.005***	-0.002***	0.005***
	0.0002	0.0001	0.0001
INC	-3.95***	4.32***	-0.14
	0.673	0.4092	0.6775
Llord	-0.01***	0.003***	0.007***
	0.00	0.00	0.00
Investor	-0.001*	-0.0004°	0.001*
	0.000	0.000	0.00
VAC	0.03***	-0.014***	
	0.003	0.002	
lnR			1.36***
			0.02
lnB		0.5***	
		0.008	
R-squared	0.75	0.91	0.94
Number of obs	1980	1980	1980
Standand Errors are below coefficients.			
Codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '°' 0.1 ' ' 1			

Looking at the other coefficients we note that all variables are significant. Higher income is a driver of lower RVB. In other words, as incomes increase, home prices (and B) go up faster than rents and RVB goes down. In the other direction, lower incomes cause RVB to rise. Poorer renters have fewer choices. More investors and more landlords reduce RVB, or more investors and landlords in a market appear to compete against each other to restrain rents. Higher vacancy rate, counterintuitively are positively related to RVB.

Jumping to Equations 9 and 10. The value for ɔ_1 in Column 2 indicates that rents increase as credit score declines. In other words, landlord charge higher rents as scores get lower. Each one unit of lower score results in rents increasing by 20 bps. A 20 unit reduction in score translates into 4 percent higher rents. Renters with lower credit scores have a more difficult time negotiating better rents contract. Or more broadly, renters with lower scores, in any CBSA, generally pay more all other things held constant.

On the other hand, home prices move positively with scores. We see this every day. A lower score here means both that the cost of owning a three bedroom house goes down (a good thing) but that the individual is restricted to a smaller or less expensive 3 bedroom house. Column 3 in Table 1 (using the ŭ_1 coefficient from Equation 10) shows each one unit reduction of score is worth 50 bps of lower cost of owning. Empirically, a twenty unit reduction in score is worth a roughly 10 percent smaller home that the renter is able to buy. The cost go down, and that matters to those households who can afford it, but it also impacts those who cannot afford it. The renter who starts off at say a 700 credit score, and through some a financial mistake finds his credit score bumped down to 680 would now have a harder time getting a loan to buy a smaller house and less negation power against the landlord. The probability of him renting now increases and he ends up transferring more wealth to the landlord than he did before.[9]

4.c Application

Even though my coefficient were estimated over twenty different CBSAs. I argue that they can be interpreted at the individual CBSA level. Holding prices constant, landlords charge more to rent a three bedroom property to households with poor scores. Holding rent constant, as score rises, mortgage companies and the GSEs are will to lend more for a more expensive three bedroom house. As score go down, the house price for a three bedroom property must goes down and the cost of home ownership falls.

To provide a direct interpretation of the ɔ_1, and ŭ_1, coefficients I create two new variables (RENT and BUY) using the median rent, the median cost of owning for Chicago, IL and my estimated coefficients to calculate the change in RENT and BUY as scores change. I apply these average percent changes to the median cost of renting and owning a three bedroom SFR detached property in Chicago, IL. The average credit score in Chicago, IL is 671. The median rent in Mar-21 was $1,765 and the median cost to own a property was

[9] Using the ɔ1 and the ŭ1 coefficients from Equations 9 and 10 suggest a slight faster negative relationship between lnBVR (-.007) than the -0.005 estimated in Equation 8.

$1,430. Renters in this score category of 670 are losing $336 per month in wealth (the difference between RENT and BUY).

At the mean credit score in Mar-21 of 671 it was cheaper to buy than rent. The share of households that were renting household at that time in Chicago, IL was 39 percent. The average renter at the 671 score was paying $336 more each month to rent than to own. Each backward movement by 20 units of score raises RENT by about $70.00 per month and BUY falls by 130.00 per month as the three bedroom rental become lower quality. The wealth lost by renters with low scores is even higher than that lost by renters with better credit scores. Renters are now losing about $540 per month in wealth. Low credit scores and low incomes combined with an inability to gather a downpayment to keep renters from buying a house and accumulating wealth. This seems to be the fate of many renters in every CBSA. Poor credit creates a negative wealth loop, which creates a permanent class of households which cannot buy and is form of market friction which keeps housing markets successfully clearing.

5. Conclusions

This paper is the first research to show the impact of credit scores on the cost of renting for the average renter household in America. My approach is unique in that I use CBSA-level data to approximate household behavior. Data at the household level for renters does not exist and the idea of an individual household concurrently being both a renting household and a home owning household is a practical contradiction - a household cannot be both. Using CBSA-level data facilitates simultaneously analyzing the rental and the purchase markets for detached single family properties over a long period of time to make statements about renters. It combines rents, home prices, credit scores, income, property tax rates, investor shares of the stock of homes, investor share of purchases at the CBSA level in a unified framework. This paper calculates precise property tax rates using IRS data for each of the 20 CBSAs over time which are then used to calculate a robust user cost of capital for each CBSA.

In some CBSAs in which home prices are high and rising quickly, some renters enjoy consuming shelter at a price less than buying the home. This is rational behavior. Nonetheless, the rent/buy ratio changes over time and one would expect the RVB ratio to head towards BVR=1.0 over time in these cities. However in many other CBSAs, renters continue to rent even though their monthly payment to rent is higher than the monthly payment to own. They transfer wealth to the landlord. After accounting for differences in the relative cost of living, incomes of the population, the investor and landlord shares and vacancy rates across CBSA, my empirical results show that for each one unit decline in credit score, rents relative to the cost of owning (the RVB ratio) go up by an average 50 bps in the three bedroom market. In two additional separate equations, I show that home prices and the cost of owning decline, but rental costs rise as credit scores decline across CBSAs. Renter households with successively lower scores, transfer increasing large shares of wealth to investors through a reduction of tenure choices (which might include buying, switching rental properties or switching to an apartment). This creates a negative feedback loop (renters who can never buy) and is a form of market friction.

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Appendix

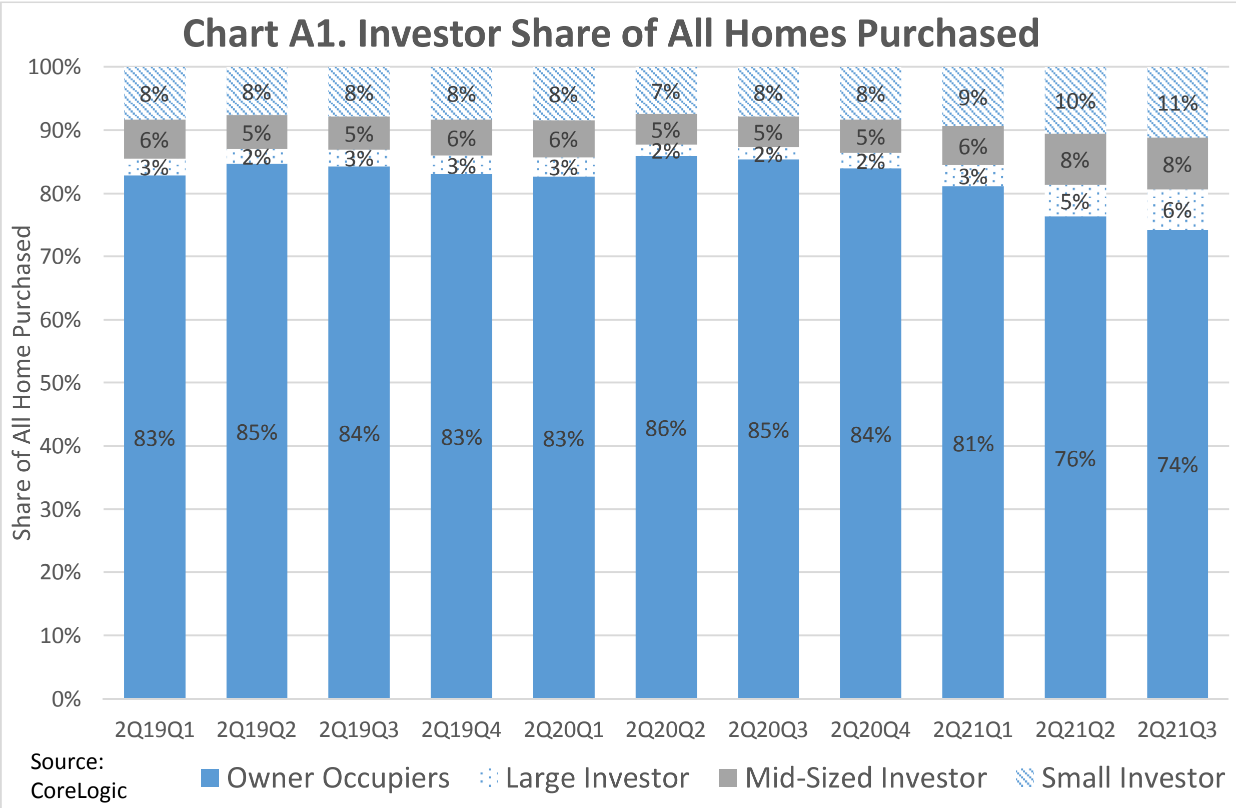

Table 2. Summary Statistics

CBSAname	RVB	Price ($,000)	Rent (mo. $)	BUY (mo. $)	UCK	Score	Landlord share	Investor share	Vacancy rate	INC ($,000)
Albuquerque, NM	1.18	144.6	1,221	1,044	0.08	713	0.33	0.21	7.42	47.1
Baltimore, MD	1.21	191.6	1,673	1,397	0.08	621	0.34	0.16	6.58	59.1
Boston, MA	0.96	346.3	2,314	2,431	0.08	727	0.39	0.25	3.58	72.6
Chicago, IL	1.14	160.8	1,589	1,415	0.10	671	0.36	0.32	6.10	59.6
Dallas, TX	1.39	131.8	1,481	1,110	0.10	718	0.41	0.23	7.85	56.1
Denver, CO	1.08	288.8	1,937	1,844	0.08	687	0.36	0.14	4.55	61.9
Houston, TX	1.44	121.3	1,467	1,042	0.10	659	0.40	0.25	8.77	56.7
Indianapolis, IN	1.63	96.4	1,143	721	0.09	667	0.35	0.22	7.69	55.6
Las Vegas, NV	1.22	165.3	1,319	1,116	0.08	640	0.47	0.32	10.05	47.7
Los Angeles, CA	0.90	472.0	2,783	3,128	0.08	706	0.52	0.22	3.69	60.5
Memphis, TN	2.15	54.0	1,012	477	0.11	607	0.40	0.32	9.85	47.2
Miami, FL	1.47	184.9	2,063	1,437	0.09	650	0.41	0.31	7.39	49.7
Milwaukee, WI	1.08	132.8	1,261	1,190	0.09	627	0.40	0.14	4.58	56.2
Minneapolis, MN	1.19	190.5	1,551	1,327	0.08	739	0.30	0.19	3.65	60.4
New York, NY	0.99	304.4	2,328	2,365	0.09	700	0.49	0.39	4.07	65.8
Phoenix, AZ	1.03	192.2	1,316	1,289	0.08	613	0.37	0.43	7.52	54.0
San Francisco, CA	0.62	781.0	3,056	5,010	0.07	748	0.46	0.18	3.37	76.8
Seattle, WA	0.84	339.3	1,912	2,344	0.08	726	0.40	0.27	3.74	74.6
Tulsa, OK	1.81	71.7	1,057	592	0.10	649	0.35	0.22	7.91	51.4
Washington, DC	0.97	302.4	2,002	2,066	0.08	720	0.37	0.11	5.00	71.5