Priced Out of Entrepreneurship:

Housing Affordability and Young Renters *

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Abstract

Rising housing costs reshape who can afford to become an entrepreneur. This paper examines how housing affordability influences entry into entrepreneurship, focusing on young individuals who lack housing collateral and are more exposed to liquidity constraints as affordability declines. While prior studies emphasize how higher house prices can encourage entrepreneurship among homeowners through collateral gains, much less is known about how worsening affordability affects those without housing wealth. We show that examining the non-owner side is essential to understanding the broader link between housing markets and entrepreneurship. We build a stylized life-cycle model in which renters and homeowners are exogenously separated, and show that these groups respond to changes in housing affordability through opposite mechanisms: a collateral channel for owners and a liquidity channel for renters. Using U.S. Census microdata aggregated to MSA-year panels and an instrumental variable strategy interacting national housing demand shocks with local housing supply elasticities, we find that declining affordability significantly reduces self-employment among young adults. The model and evidence together highlight housing affordability as a fundamental determinant of who can take entrepreneurial risks. Beyond housing policy, improving affordability is crucial for expanding economic opportunity, fostering social mobility, and sustaining local dynamism.

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1 Introduction

Entrepreneurship plays a central role in driving innovation, productivity growth, and job creation. Yet the United States has witnessed a marked and persistent decline in business dynamism over the past several decades. The employment share of young firms—those less than six years old—has fallen by nearly half since the late 1980s, reflecting a broader secular slowdown in new business formation and job reallocation (Davis and Haltiwanger (2024)). This decline has raised growing concern among policymakers and economists that the U.S. economy may be losing one of its key engines of renewal and upward mobility.

Over the same period, housing costs have risen sharply relative to household incomes, especially in major metropolitan areas, giving rise to what has become widely recognized as a *housing affordability challenge* (Glaeser and Gyourko (2025)). The coexistence of these two long-run trends—falling entrepreneurship and worsening housing affordability—poses a fundamental economic question: *to what extent do rising housing costs reshape who can afford to become an entrepreneur?* We address this question by combining new empirical evidence with a simple theoretical framework that links local housing affordability to entrepreneurial entry.

1.1 Motivation

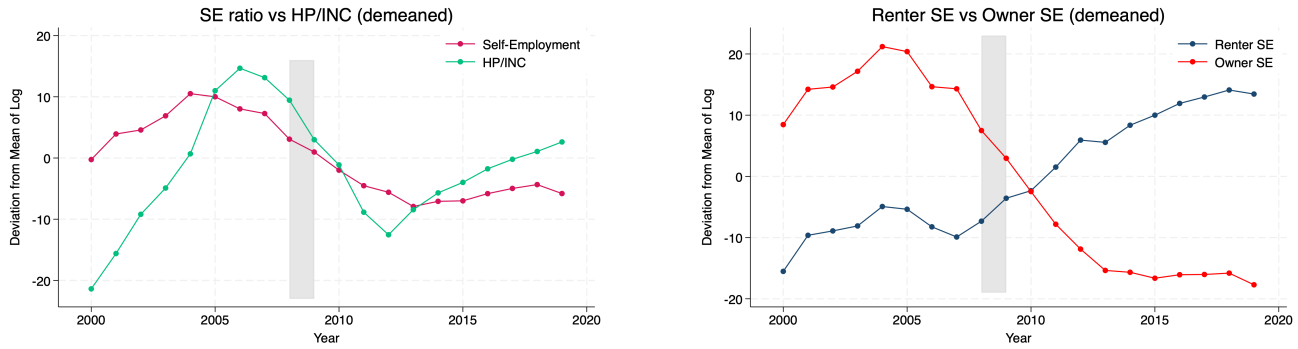
Two empirical regularities motivate our analysis. First, aggregate self-employment rates move closely with the house price-to-income ratio (HP/INC)—a widely used measure of housing affordability—over the past two decades. Second, this aggregate relationship conceals striking heterogeneity by housing tenure: when we separate renters and owners, their patterns move in opposite directions.

Figure 1.1 illustrates these patterns using demeaned series. Each plotted series is demeaned at the national sample mean over 2000–2019 (i.e., we plot deviations from the sample mean rather than levels). The left panel shows that aggregate self-employment and HP/INC co-move over time. This co-movement may simply reflect correlation. However, prior research has interpreted a similar pattern as evidence of a causal mechanism operating through the collateral channel—whereby rising house prices expand homeowners' collateralizable wealth and thereby stimulate entrepreneurship (e.g., Schmalz, Sraer, and Thesmar, 2017; Corradin and Popov, 2015).

The right panel, however, reveals that renters and owners move in opposite directions. During peri-

ods of declining affordability (rising HP/INC), renter self-employment tends to increase modestly, while owner self-employment declines. This opposite movement suggests that different economic mechanisms are at work for each group. For homeowners, rising house prices may relax collateral constraints, facilitating access to credit and enabling business creation. For renters, by contrast, rising housing costs tighten liquidity constraints through higher rents and greater difficulty in saving for down payments. As a result, the same housing affordability shock can stimulate entrepreneurship among owners while discouraging it among renters—a divergence that lies at the core of our analysis.

Figure 1.1: Time Trend in Entrepreneurship and Housing Affordability.



Sample: ACS microdata, 2000–2019, individuals aged 20–60.
Note: Zillow Home Value Index (ZHVI) is used as house prices. All series are demeaned at the 2000–2019 national sample mean (log deviations), person-weighted. Recession periods are shaded where applicable.

This divergence has an intuitive economic logic. Both entrepreneurship and homeownership require substantial capital. Rising house prices expand collateralizable housing wealth for owners, relaxing borrowing constraints. For renters, however, higher house prices tighten liquidity constraints by raising rents and reducing savings capacity. This asymmetry is particularly binding for young households who have yet to accumulate housing wealth. Young renters thus face a "double squeeze": immediate cash-flow pressure from rent payments and long-run barriers to wealth accumulation. These forces plausibly deter entrepreneurial entry precisely among the cohorts most critical for the renewal of the business sector.

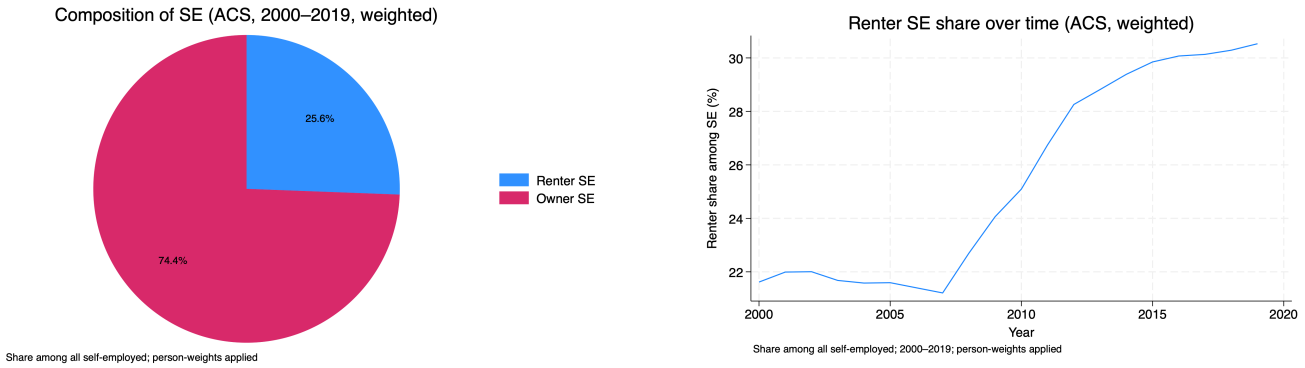
These patterns motivate our central research question: Does a decline in local housing affordability, measured by an increase in HP/INC, disproportionately discourage entrepreneurship among young renters? More broadly, we examine whether affordability shocks differentially affect renters versus

owners, and how these effects vary systematically across the life cycle. By isolating these channels empirically, we shed light on how housing markets shape not only the level but also the composition of entrepreneurial activity in the United States.

Rising housing costs, therefore, do more than redistribute wealth; they also determine who can participate in local economic renewal. Understanding this link is crucial for designing policies that sustain entrepreneurship, preserve local service availability, and prevent widening opportunity gaps between renters and owners.

1.2 Why Renters Matter Renters constitute a quantitatively important but historically understudied share of the entrepreneurial population. Figure 1.2 shows that renters account for roughly one-quarter of all self-employed workers, and that this share has been steadily rising over time. The growth of renter entrepreneurship reflects broader shifts in housing markets—declining homeownership rates, delayed household formation, and the growing prevalence of renting in major metropolitan areas. As a result, understanding the economic behavior of renters has become increasingly relevant for assessing the sources of local economic dynamism.

Figure 1.2: Why renters matter.



Sample: ACS microdata, 2000–2019, individuals aged 20–60.
Note: Zillow Home Value Index (ZHVI) is used as house prices; demeaned log series, person-weighted. Renters account for about 25 percent of all self-employed, and their share has increased over time.

Despite their growing importance, renters have received limited attention in the entrepreneurship literature. Existing research has primarily focused on homeowners, emphasizing how rising house prices relax collateral constraints and stimulate business creation through home-equity borrowing. By contrast, the renter side of the market—where individuals face tighter liquidity constraints and higher housing

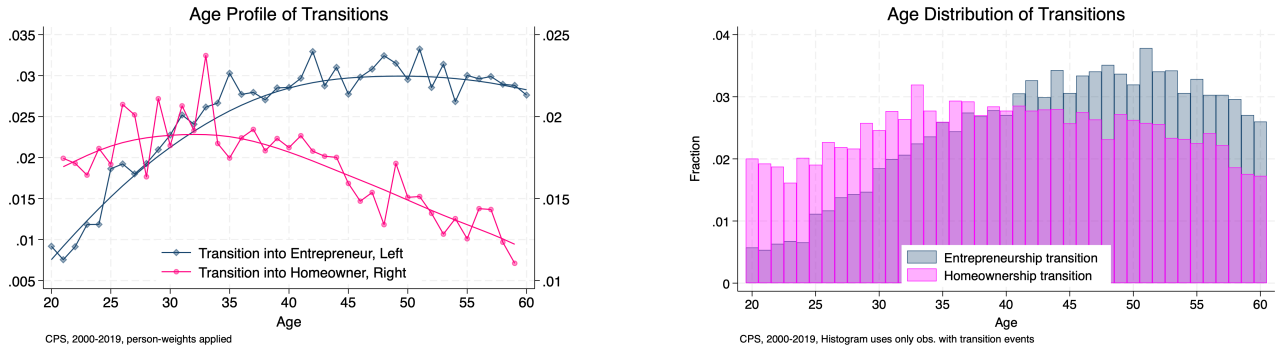
costs—remains largely unexplored. This omission overlooks a central and timely source of heterogeneity: housing affordability shocks may discourage entrepreneurship precisely among a large and expanding segment of potential entrants.[1]

Our contribution is to bring renters—particularly young renters—to the forefront of the analysis. By explicitly quantifying how housing affordability shocks affect renter entrepreneurship, we shed light on a margin that is both increasingly prevalent and economically consequential in contemporary housing markets. In doing so, we provide timely evidence on a group whose economic prospects are increasingly tied to housing market dynamics.

1.3 Why Young vs. Old?

Age interacts with housing tenure in economically meaningful ways. The timing of transitions into homeownership and into entrepreneurship follows distinct life-cycle profiles. On average, households purchase homes in their late 20s and early 30s, while entrepreneurial entry peaks later, in the 40s and 50s. This mismatch implies that the financial and housing conditions young adults face early in life can shape their long-run entrepreneurial trajectories.

Figure 1.3: Why young vs. old.



Sample: CPS microdata, 2000–2019, individuals aged 20–60.
Note: ZHVI is used as house prices; person-weighted. Homeownership and entrepreneurship transitions occur at different life-cycle stages, implying heterogeneous effects of HP/INC shocks.

Figure 1.3 highlights this life-cycle contrast. Panel A shows that the probability of transitioning into homeownership peaks much earlier than entrepreneurial entry, while Panel B demonstrates that these different timing profiles translate into heterogeneous exposure to housing affordability shocks.[2] Young

[1] See Appendix Figure A.1 and Figure A.2 for complementary evidence on renter self-employment patterns by age.
[2] See Appendix Figure A.3a (incorporated) and Figure A.3b (unincorporated) for CPS-ASEC age profiles.

households, who are more likely to rent and have limited wealth accumulation, are directly exposed to rising rents and face binding liquidity constraints. Older households, by contrast, are more likely to already own homes and to benefit from collateral gains when housing prices rise.

These age-tenure interactions are increasingly salient in today's economy. Over the past two decades, homeownership among young adults has declined sharply, while the median age of first-time homebuyers has risen to record highs. As a result, younger cohorts now spend a larger share of their early careers as renters, often in high-cost urban areas where housing affordability has deteriorated most. These trends amplify the extent to which housing market dynamics influence who can take entrepreneurial risks.

This motivates our empirical focus on both the tenure divide (renters versus owners) and the age divide (young versus old). We show that rising housing costs disproportionately reduce entrepreneurship among young renters, while leaving older cohorts and homeowners largely unaffected—or even positively stimulated through collateral gains. The growing disconnect between housing affordability and youth wealth accumulation thus represents a key constraint on the next generation of entrepreneurs.

1.4 What We Do in This Paper

We develop a simple theoretical model and complement it with new empirical evidence to understand how housing affordability shapes entrepreneurial entry across tenure and age groups.

We begin with a two-period household model in which individuals choose between entrepreneurship and paid employment under borrowing and budget constraints. Housing tenure (owner versus renter) is exogenously assigned. Entrepreneurial income in period 2 is stochastic for those who choose to start a business. Solving the household's decision problem yields a simple cutoff rule for entrepreneurial entry. The decision rule shows that housing costs influence renters and owners in opposite directions: for renters, higher rents tighten liquidity constraints and raise the threshold return required to start a business, whereas for owners, higher housing values expand collateral and relax borrowing constraints, lowering the effective entry threshold. The model delivers a clear comparative static—an increase in housing costs discourages entrepreneurial entry among renters but encourages it among owners, even under the same aggregate shock. This theoretical structure provides an intuitive mechanism that guides our empirical design.

Empirically, we test these mechanisms using microdata from the American Community Survey (ACS, 2000–2019), aggregated to the Metropolitan Statistical Area (MSA)–year level for individuals

aged 20–60. The dependent variable is the share of self-employed workers, measured separately by incorporation status, housing tenure, and age group. The key explanatory variable is the local house price-to-income ratio (HP/INC), a standard measure of housing affordability. A rise in HP/INC indicates that housing costs have grown faster than local earnings, tightening liquidity constraints, particularly for renters.

A key empirical challenge is endogeneity: local housing prices and entrepreneurship may both respond to unobserved local shocks such as migration inflows, employment booms, or gentrification. To address this concern, we employ an instrumental variable (IV) strategy that interacts *national housing demand shocks*—captured by changes in the national HP/INC ratio—with each MSA's *housing supply elasticity* from Saiz (2010).[3] Because elasticity reflects long-standing geographic and regulatory constraints, this variation is plausibly exogenous to local entrepreneurial activity. Our specifications also control for local labor demand (Bartik shocks), credit supply (Community Reinvestment Act small business lending), unemployment, and population growth to isolate the causal impact of housing affordability.

The empirical results align closely with the theoretical predictions. In the data, declining local housing affordability—measured by increases in HP/INC—significantly reduces entrepreneurship among young renters, while homeowners, especially young owners, exhibit positive responses consistent with a collateral channel. The coherence between the model's comparative statics and the empirical estimates strengthens our interpretation that housing affordability shocks, rather than housing wealth alone, are a key determinant of who becomes an entrepreneur in the modern economy.

1.5 Contribution and Main Message

This paper makes two central contributions to the literature on entrepreneurship and housing markets.

First, we reorient the analysis from homeowners to renters, uncovering a neglected but increasingly important margin of entrepreneurial activity. Most prior studies have emphasized the collateral channel, in which rising house prices expand homeowners' borrowing capacity and thereby encourage business formation. We complement this view by showing that the same housing shocks that benefit owners can simultaneously disadvantage renters through tighter liquidity constraints. In doing so, we highlight renters as a growing yet financially vulnerable segment whose entrepreneurial potential is especially

[3] As a robustness check, we also construct an alternative instrument using the *housing price sensitivity measure* from **?**, which yields consistent results.

sensitive to housing affordability.

Second, we advance measurement by introducing the house price-to-income ratio (HP/INC) as a core indicator of affordability—capturing not only asset values but also purchasing power relative to local earnings. Unlike raw house prices, HP/INC directly reflects the liquidity channel that binds renters and younger households. This measure allows us to systematically compare how the same housing affordability shock transmits differently across tenure and age groups.

Our theoretical model shows that changes in housing affordability affect renters and owners through distinct mechanisms: higher housing costs tighten liquidity constraints for renters but relax borrowing constraints for owners through collateral gains. This theoretical mechanism aligns closely with our empirical findings. Empirically, we find that increases in HP/INC substantially reduce entrepreneurship among renters, with the strongest effects among young renters facing liquidity constraints. By contrast, homeowners—especially younger ones—respond positively in incorporated self-employment, consistent with a collateral and wealth effect.

The central message is that housing affordability shocks reshape who becomes an entrepreneur. Rising housing costs crowd out young renters from local business formation while leaving homeowners unaffected or even advantaged. These findings reveal a previously overlooked mechanism through which housing markets influence economic dynamism and opportunity inequality—beyond what collateral channels alone can explain. By clarifying how housing affordability affects the allocation of entrepreneurial opportunity, our study provides new insight for policies that aim to support inclusive local growth, sustain small-business dynamism, and mitigate the long-run costs of housing-induced inequality.

1.6 Preview of What Follows

The remainder of the paper is organized as follows. Section II reviews related literature and outlines the theoretical framework. Section III describes the data and construction of the housing affordability measure. Section IV presents the empirical strategy and main results. Section V reports robustness checks and heterogeneity analyses within renter groups. Section VI concludes with broader implications for housing affordability and entrepreneurship.

2 Relation to the Literature

Our paper relates to and extends three main strands of research in economics: (i) the literature on liquidity constraints and entrepreneurship, (ii) the work on home equity and collateral channels for entrepreneurial activity, and (iii) studies examining the interaction between housing tenure and occupational choice. While each of these literatures has yielded important insights, our contribution is to integrate them within a unified framework that emphasizes the role of housing affordability—particularly for young renters. In doing so, we connect micro-level financing frictions to aggregate patterns of business dynamism, similar in spirit to Davis and Haltiwanger (2024), who highlight how housing and credit conditions jointly shape firm reallocation and entry dynamics.

Liquidity constraints and entrepreneurship A large body of research has emphasized how financing frictions shape entry into entrepreneurship. Evans and Jovanovic (1989) developed an early framework showing that liquidity constraints bind entrepreneurial choices: wealthier individuals are more likely to start businesses, even when controlling for ability. Empirical work by Holtz-Eakin, Joulfaian, and Rosen (1994a,b) and Blanchflower and Oswald (1998) confirmed that exogenous wealth shocks such as inheritances or lottery winnings raise the probability of self-employment. However, Hurst and Lusardi (2004) and Moskowitz and Vissing-Jørgensen (2002) questioned the causal interpretation of this wealth–entrepreneurship gradient, arguing that preference heterogeneity and non-pecuniary motives may explain much of the observed pattern.

On the theoretical side, Cagetti and Nardi (2006) and Buera and Shin (2013) formalized how persistent financial frictions distort occupational allocation and productivity dynamics. These frameworks highlight that easing liquidity constraints can generate large effects on entrepreneurial entry, especially for younger or less wealthy households. Our contribution revisits this mechanism through the lens of housing affordability. Rather than focusing on exogenous wealth shocks, we use the house price-to-income ratio (HP/INC) as a tractable measure of local liquidity tightening. Rising HP/INC increases both rental burdens and down-payment hurdles, shrinking disposable resources available for entrepreneurial investment. By examining how the composition of self-employment shifts across tenure and age groups, we provide new evidence consistent with affordability constraints binding especially for young renters. In this way, we complement the existing literature by reframing liquidity constraints in

terms of compositional effects rather than aggregate entry flows.

Home equity and collateral channels A second strand of research emphasizes the collateral channel through which housing wealth supports entrepreneurship. Increases in home values expand homeowners' borrowing capacity by relaxing collateral constraints, a mechanism first formalized by Kiyotaki and Moore (1997). Empirically, Schmalz, Sraer, and Thesmar (2017) show that house price appreciation increases the likelihood of incorporated business formation among homeowners, while Corradin and Popov (2015) provide cross-country evidence that rising house prices stimulate entrepreneurship through credit supply expansions. Disney, Gathergood, and Henley (2010) and Harding and Rosenthal (2017) further document that home equity extraction facilitates business investment and survival, reinforcing the role of housing collateral in entrepreneurship. Recent work by Kerr, Kerr, and Nanda (2022) uses detailed U.S. Census microdata to show that most of the observed correlation between house prices and entrepreneurship reflects short-lived entry in housing-related sectors, while true collateral effects are concentrated among highly leveraged homeowners. This evidence highlights that collateral-driven entrepreneurship exists but is quantitatively modest, underscoring strong heterogeneity across households in how housing shocks relax credit constraints.

Our work complements and extends this literature by emphasizing the asymmetry between owners and renters. We show that while homeowners' self-employment shares rise or remain stable as HP/INC increases, renters' shares decline sharply—especially among the young. This asymmetry is precisely what one would expect if house price appreciation generates collateral gains for owners but liquidity losses for renters. In this sense, we extend the collateral literature into a broader tenure-comparative framework, demonstrating that the same housing shock can have opposite effects across population segments. Our interpretation also aligns with Benmelech, Bergman, and Seru (2011) and Liu (2013), who show that credit constraints and asset values interact to propagate macroeconomic shocks through household and firm balance sheets.

Housing tenure, occupational choice, and business dynamism A third line of research connects housing tenure decisions with occupational choice and mobility. Sinai and Souleles (2005) and Flavin and Yamashita (2002) show that homeownership and labor supply are jointly determined, as both depend on households' expectations of income and risk exposure. Bracke, Hilber, and Silva (2018) find that mortgage debt reduces job mobility and risk-taking, while Corradin and Popov (2015) empha-

size that tenure choice (own versus rent) and entrepreneurship are interrelated but typically studied in isolation.

We build on this work by showing that tenure and entrepreneurship are competing uses of scarce household capital. When HP/INC rises, young households are pushed further into renting and away from entrepreneurship, since both housing and business formation require large up-front resources. Following Schoar (2010) and Levine and Rubinstein (2017), we distinguish between incorporated and unincorporated self-employment to separate opportunity-driven from necessity-driven entrepreneurship. Our evidence indicates that affordability shocks reduce precisely the types of entrepreneurial entry most likely to reflect growth-oriented, incorporated ventures among young renters.

This perspective also connects to the macro literature on declining business dynamism. Decker, Haltiwanger, Jarmin, and Miranda (2014) document a long-run fall in firm entry and reallocation, while Davis and Haltiwanger (2024) and Guren, McKay, Nakamura, and Steinsson (2021) highlight the role of housing and credit frictions in shaping aggregate adjustment. By situating housing affordability within this broader context, we show that rising HP/INC acts as a new friction that redistributes entrepreneurial activity away from liquidity-constrained groups, thereby contributing to the observed decline in dynamism.

SUMMARY Taken together, these strands of literature emphasize the importance of financing constraints, housing wealth, and tenure status in shaping entrepreneurial dynamics. Our contribution is to integrate these insights, reframing the debate around housing affordability as a determinant of *who* gets to become an entrepreneur. By focusing on renters—and particularly young renters—we highlight a group largely overlooked in prior research but central to understanding the contemporary decline in business dynamism and the reallocation of entrepreneurial opportunity across generations.

3 Model

Following the spirit of Chetty, Sandor, and Szeidl (2017), we develop a simple two-period model of household decision-making to formalize our ideas and guide the empirical analysis. In particular, we construct a two-period model of entrepreneurial choice under borrowing constraints and housing. The objective is to capture the asymmetric channels through which housing affordability—defined as the relative level of rent or house prices to income or borrowing capacity—affects homeowners and renters differently in their entrepreneurship decisions. The model yields distinct cutoff rules for renters and homeowners, operating through separate mechanisms. An increase in housing rent raises entrepreneurial incentives among homeowners while discouraging entrepreneurship among renters.

3.1 Motivation and intuition

The empirical patterns documented above reveal two consistent asymmetries. First, rising house prices increase entrepreneurship among homeowners, consistent with a collateral channel. Second, the same shocks reduce entrepreneurship among renters, reflecting liquidity tightening. However, existing work—such as Schmalz, Sraer, and Thesmar (2017) and Corradin and Popov (2015)—focuses almost exclusively on the owner side and does not examine how rising rents or borrowing constraints affect renters' entry decisions.

We extend the existing literature by incorporating a renter's problem that explicitly features both rent burden and borrowing constraints. The resulting comparative statics clarify why rising housing costs stimulate entrepreneurial entry among homeowners but discourage it among renters—especially those who are young or liquidity constrained.

We begin with the homeowner's problem and illustrate the positive housing-collateral channel, which were studied in Schmalz, Sraer, and Thesmar (2017) and Corradin and Popov (2015). We then turn to the renter's problem and show how higher housing prices—reflected in higher rents—can suppress entrepreneurial entry among renters. To highlight our contribution, we compare the model's predictions for homeowners and renters and derive the distinct mechanisms underlying their responses. Finally, through comparative statics, we derive testable implications for how rent levels affect renters' entrepreneurial activity.

3.2 Owner's Problem

A homeowner chooses consumption (C_0, C_1), savings s, and an entrepreneurship decision $e \in \{0, 1\}$, taking the owned housing stock H as given, to maximize expected lifetime

utility:

$$\max_{C_0, C_1, s, e} V(W_0, R, H) = \frac{\left(C_0^{1-\mu}(H-\bar{h})^{\mu}\right)^{1-\gamma}}{1-\gamma} + \kappa^a \beta \left[\frac{\left(C_1^{1-\mu}(H-\bar{h})^{\mu}\right)^{1-\gamma}}{1-\gamma}\right] \tag{3.1}$$

subject to the following constraints:

$$C_0 + s + Fe \leq W_0 + y_0, \qquad \text{(Budget constraint, } t=0\text{)} \tag{3.2}$$

$$C_1 \leq (1-e)y_1 + e\pi + R_f s, \qquad \text{(Budget constraint, } t=1\text{)} \tag{3.3}$$

$$s \geq -\big(B + \eta q H\big), \qquad \text{(Borrowing constraint)} \tag{3.4}$$

$$\pi \sim N(\mu_\pi, \sigma_\pi^2), \qquad \text{(Entrepreneurial return distribution)} \tag{3.5}$$

where the parameter $\mu \in (0,1)$ denotes the utility share of housing, $\gamma > 0$ is the coefficient of relative risk aversion, and β is the intertemporal discount factor. The term $\kappa^a \in (0,1]$ captures age-specific discounting. R_f denotes the return on savings, and $\bar{h}$ represents the minimum required level of housing consumption. The fixed cost F corresponds to the upfront investment required to start a business. We assume that the house price q equals the discounted sum of future rents, implying that $q = R + \frac{R}{R_f}$, where R is the unit housing rent. Hence, a higher rent increases q, meaning that an increase in rent raises the market value of an owned home. Let B denote the household's borrowing limit without collateral, and $1-\eta$ the haircut rate applied to housing collateral. The total borrowing limit of a homeowner is therefore specified as $B + \eta q H$.[4] An increase in rent thus expands the homeowner's borrowing capacity through its positive effect on q. Labor income (y_0, y_1) and initial wealth W_0 are exogenously given, while entrepreneurial returns are stochastic with expected profit μ_π and variance σ_π^2. If the household decides to start a business, it must pay the fixed cost F immediately and forgo future labor income y_1, in exchange for a random return π.

Effect of Rent on Homeowners' Entrepreneurship Decision By approximately solving the homeowner's entrepreneurship problem, we derive the optimal cutoff $\mu^*_{\pi,O}$ that makes the homeowner indifferent between entering ($e=1$) and not entering ($e=0$), as stated in the following proposition.

[4]We assume that the household is an outright homeowner. Whether the homeowner holds the property outright or is highly leveraged should not alter the direction of how changes in rent affect borrowing capacity, although it may influence the magnitude of the effect. Since our model is designed to clarify the underlying mechanism rather than deliver quantitative estimates, we proceed under this simplifying assumption.

Proposition 3.1. *Let $\bar{C}1, E$ denote the expected level of consumption in period 1 when entrepreneurship is chosen. If the borrowing constraint binds (i.e., $s = -B - \eta qH$), the homeowner's optimal entrepreneurship cutoff, $\mu\pi, O^*$, is approximately given by:*

$$\mu^*_{\pi,O} = y_1 + \underbrace{\frac{(\mu+\gamma-\mu\gamma)}{2}\frac{\sigma^2_\pi}{\bar{C}_{1,E}}}_{\text{(1) Risk-bearing Capacity}} + \underbrace{\frac{F}{\kappa^a\beta}\left[\frac{W_0+y_0+B+\eta qH}{y_1+R_f(-B-\eta qH)}\right]^{-(\mu+\gamma-\mu\gamma)}}_{\text{(2) House Collateral Benefit}}. \tag{3.6}$$

If μ_π exceeds $\mu^*_{\pi,O}$, it is optimal for the homeowner to become an entrepreneur. The cutoff $\mu^*_{\pi,O}$ is decreasing in q (and thus in R), i.e., $\frac{\partial \mu^*_{\pi,O}}{\partial R} < 0$, which implies that higher rent encourages greater entrepreneurial entry among homeowners.

The proof is provided in the Appendix. To build intuition for the cutoff rule, note first that y_1 represents the wage income the household would earn if it chose not to become an entrepreneur. This can be interpreted as the opportunity cost of entrepreneurship. Hence, when y_1 is high, the homeowner requires a higher expected entrepreneurial profit to justify entry.

Second, the term $\frac{(\mu+\gamma-\mu\gamma)}{2}, \frac{\sigma^2_\pi}{\bar{C}_{1,E}}$ represents the risk premium associated with entrepreneurship, derived from the household's expected utility under entry. When future entrepreneurial profits are more uncertain (i.e., higher σ^2_π), the household requires a higher expected return to start a new business. Moreover, for a given level of risk, a household that expects to be wealthier on average in the future—reflected in higher expected consumption $\bar{C}_{1,E}$—is more willing to bear risk, which lowers the risk-premium term. Conversely, a household expecting lower future consumption becomes less willing to take risk. In the homeowner's case, changes in housing rent do not affect this risk-bearing capacity—unlike for renters, as we will show below.

Lastly, the term $\frac{F}{\kappa^a\beta}[\frac{W_0+y_0+B+\eta qH}{y_1+R_f(-B-\eta qH)}]^{-(\mu+\gamma-\mu\gamma)}$ represents the upfront investment cost of entrepreneurship, scaled by the relative marginal utility between periods 0 and 1.[5] A lower entrepreneurial cost F reduces the expected profit required for entry. The effective cost of F also depends on the relative marginal utilities across the two periods. In particular, when the borrowing constraint binds—as assumed here—the marginal utility in period 0 exceeds that in period 1 by more than the gross return R_f, making the utility-adjusted cost of the upfront investment effectively higher than R_f.

Most importantly, $\frac{\partial \mu^*_{\pi,O}}{\partial R} < 0$, implying that higher rent stimulates entrepreneurship among home-

[5]Note that $\frac{1}{\kappa^a\beta}\left(\frac{C_0}{C_1}\right)^{-(\mu+\gamma-\mu\gamma)} = R_f$ when the borrowing constraint does not bind.

owners. This result follows from the last term in the cutoff expression, while the first two terms are unaffected by rent. As rent R increases, the housing price q rises, relaxing the household's borrowing constraint through the collateral channel. A higher q increases the numerator and decreases the denominator in the third term. Since $-(\mu+\gamma-\mu\gamma)<0$, this reduces the entire term and thus lowers $\mu^*_{\pi,O}$. In other words, higher rent increases housing prices, which in turn lowers the entrepreneurial cutoff and encourages entry among homeowners. This mechanism corresponds to the positive housing-collateral channel emphasized by Schmalz, Sraer, and Thesmar (2017) and Corradin and Popov (2015).

3.3 Renter's Problem In contrast, renters are negatively affected. Intuitively, consider a renter who chooses consumption (C_0, C_1), housing services (h_0, h_1), savings s, and an entrepreneurship decision $e \in \{0,1\}$ to maximize expected lifetime utility:

$$\max_{C_0,h_0,C_1,h_1,s,e} V(W_0,R) = \frac{\left(C_0^{1-\mu}(h_0-\bar{h})^{\mu}\right)^{1-\gamma}}{1-\gamma} + \kappa^a \beta \left[\frac{\left(C_1^{1-\mu}(h_1-\bar{h})^{\mu}\right)^{1-\gamma}}{1-\gamma}\right] \tag{3.7}$$

subject to the following constraints:

$$R\bar{h} + m_0 + s + Fe \le W_0 + y_0, \qquad \text{(Budget constraint, } t=0\text{)} \tag{3.8}$$

$$R\bar{h} + m_1 \le (1-e)y_1 + e\pi + R_f s, \qquad \text{(Budget constraint, } t=1\text{)} \tag{3.9}$$

$$s \ge -B, \qquad \text{(Borrowing constraint)} \tag{3.10}$$

$$\pi \sim N(\mu_\pi, \sigma_\pi^2), \qquad \text{(Entrepreneurial return distribution)} \tag{3.11}$$

While all notations remain the same as before, in the budget constraint, $m_t = C_t + R(h_t - \bar{h})$, represents effective consumption expenditure, obtained by netting out the cost of minimum required housing from total housing expenditure. Unlike homeowners, renters do not own housing stock and must decide how much housing service to consume. At the same time, their borrowing constraint cannot be relaxed through housing collateral.

Effect of Rent on Renter's Entrepreneurship Decision By approximately solving the above entrepreneurship decision problem, we derive the renter's optimal entrepreneurship decision cut off $\mu^*_{\pi,R}$ that makes the household indifferent between entering $(e=1)$ and not entering $(e=0)$ as following.

Proposition 3.2. *Let the composite price index be defined as* $\phi(R) = \left[(1-\mu)^{1-\mu}\left(\frac{\mu}{R}\right)^{\mu}\right]^{1-\gamma}$, *and the*

shadow price on the borrowing constraint as $\lambda^B = \phi(R)[(m_{0,W})^{-\gamma} - \kappa^a \beta R_f (m_{1,W})^{-\gamma}]$. *If the borrowing constraint binds (i.e.,* $s = -B$*), the renter's optimal entrepreneurship decision cutoff rule* $\mu^*_{\pi,R}$ *is to a approximation,*

$$\mu^*_{\pi,R} = y_1 + \underbrace{\frac{\gamma}{2}\frac{\sigma_\pi^2}{\bar{m}_{1,E}}}_{\text{(1) Risk-bearing Capacity}} + \underbrace{\left[R_f + \frac{\lambda^B}{\kappa^a \beta \phi(R)(m_{1,W})^{-\gamma}}\right]F}_{\text{(2) Rent Burden Channel}}. \tag{3.12}$$

where $m_{0,W} = W_0 + y_0 - R\bar{h} + B - Fe$, $m_{1,W} = y_1 + R_f S - R\bar{h}$, *and* $\bar{m}_{1,E} = \mu_\pi + R_f S - R\bar{h}$. *If* μ_π *is higher than* $\mu^*_{\pi,R}$, *it is optimal for renter to become an entrepreneur. This* $\mu^*_{\pi,R}$ *is a positive function of* R, *(i.e.,* $\frac{\partial \mu^*_{\pi,R}}{\partial R} > 0$.*), which implies that higher rent suppresses renters' entrepreneurships.*

The proof is provided in the Appendix. The intuition behind the term y_1 is exactly the same with the case of a homeowner. However, the second term, $\frac{\gamma}{2}\frac{\sigma_\pi^2}{\bar{m}_{1,E}}$, differs from the homeowner case. While this term still represents the risk premium of entrepreneurship based on the household's utility under entry, $\bar{m}_{1,E}$, this term now depends on the housing rent R. This is because the household does not own a house. As R increases, housing expenditure rises, reducing total consumption expenditure. Intuitively, as rent goes up, households become more concerned about daily spending, which lowers their capacity to bear risk.

In addition, $[R_f + \frac{\lambda^B}{\kappa^a \beta \phi(R)(m_{1,W})^{-\gamma}}]F$ represents the utility cost of the upfront investment required for entrepreneurship. Note that if the borrowing constraint does not bind, $\lambda^B = 0$, which makes this channel null. However, if the borrowing constraint binds,[6] the renter fails to smooth consumption, resulting in a lifetime utility loss such that $\lambda^B = \phi(R)[m_{0,W}^{-\gamma} - \kappa^a \beta R_f m_{1,W}^{-\gamma}] > 0$.

Importantly, if we interpret period 0 as the young period and period 1 as the old period, households have less wealth and are borrowing constrained when young, implying a higher marginal utility of wealth in period 0: $m_{0,W}^{-\gamma} > \kappa^a \beta R_f m_{1,W}^{-\gamma}$. This naturally implies $\lambda^B > 0$. Moreover, when wealth is lower, the marginal utility of wealth responds more strongly to increases in R, given the minimum required housing consumption, yielding $\frac{\partial \lambda^B}{\partial R} > 0$. We refer to this mechanism as the *rent-burden channel*.

In aggregate, as housing rent increases, both the second and third terms rise, which ultimately raises $\mu^*_{\pi,R}$. This implies that only renters with exceptional business ideas will choose to become entrepreneurs, while many others will be discouraged. In other words, higher housing rent suppresses entrepreneurship

[6] Young entrepreneurs typically face tight borrowing constraints, which often forces them to rely on family loans.

among renters.

Difference between Homeowners and Renters Such reasoning shows the stark difference between how renters and owners are affected through the increase in housing rents. Imagine that the distribution of μ_π among renters is same with the distribution of μ_π among homeowners. This implies that, when housing rent goes up, the number of renter entrepreneurs will decrease while that of homeowners will increase.

3.4 Comparative Statics and Testable Implications The model yields the following prediction about the effect of rent on the entrepreneurship decision of renters:

$$\frac{\partial \mu^*_{\pi,R}}{\partial R} = \frac{\gamma \sigma_\pi^2}{2} \frac{\bar{h}}{\bar{m}^2_{1,E}} + \gamma \bar{h} \left(\frac{m_{0,W}}{m_{1,W}} \right)^{-\gamma} \left[\frac{1}{m_{0,W}} - \frac{1}{m_{1,W}} \right] \frac{F}{\kappa^a \beta}. \tag{3.13}$$

When $m_{0,W} < m_{1,W}$,[7] this derivative is always positive, meaning that an increase in housing rent increases the required expected return for entrepreneurship, thereby discouraging entry among renters. Several comparative statics follow from this relationship.

(i) Start-up cost F. When F is higher, the required profit threshold increases, and the sensitivity to rent also rises, as expected under a binding borrowing constraint. This implies that the rent-burden channel will be particularly important for incorporated businesses relative to unincorporated ones, since the former typically involve higher start-up costs. Industries with larger fixed entry costs should thus exhibit stronger negative effects of rent on entrepreneurship.

(ii) Consumption smoothing gap $(m_{0,W} - m_{1,W})$. When the gap between $m_{0,W}$ and $m_{1,W}$ widens, the negative impact of rent on renters' entrepreneurship becomes stronger. This suggests that households facing greater borrowing constraints or larger deviations from consumption smoothing are more exposed to rent increases in terms of their ability to start a business. Typically, this applies to young households or those expecting high future income growth but currently facing tight liquidity.

(iii) Minimum required housing $\bar{h}$. When $\bar{h}$ is larger, the rent effect intensifies. Households requiring a greater amount of essential housing services experience a stronger suppression of entrepreneurial

[7] This assumption is plausible when focusing on young, borrowing-constrained households seeking to start a new business.

activity when rents rise. This group includes households with multiple children or those with family members who require additional care or support.

These analytical results provide the micro-foundations for our empirical design. In Section **??**, we test these predictions using instrumental variation in local housing affordability derived from housing-supply elasticity à la Saiz (2010). We show that increases in the house price-to-income ratio (HP/INC)—a proxy for rent—reduce entrepreneurship among renters, especially among the young, while homeowners respond in the opposite direction.

4 Data

This section describes the data sources, sample construction, and variable definitions. We assemble a comprehensive dataset that combines repeated cross-sectional microdata on households and workers with geographically disaggregated measures of housing prices, incomes, credit supply, and local demand conditions. Specifically, we merge the American Community Survey (ACS) and the Current Population Survey (CPS) with external data from Zillow, the Community Reinvestment Act (CRA) small-business lending files, the Federal Deposit Insurance Corporation (FDIC) Summary of Deposits (SDI) and FDIC Institutions datasets, and the Bureau of Labor Statistics (BLS) Quarterly Census of Employment and Wages (QCEW). The QCEW data include both NAICS-based and SIC-based files, which we use to construct Bartik-style local demand controls. The CRA and FDIC data capture local credit supply intensity, complementing the household and housing market data. These sources are integrated following the approach of Davis and Haltiwanger (2024), aligning household outcomes with local market characteristics in consistent geographic panels.[8]

The resulting dataset forms two complementary panels. At the state level, we construct a balanced panel of 51 states for the 2000–2019 period (20 years). At the metropolitan statistical area (MSA) level, the data span 167 MSAs from 2005 to 2019 (15 years). The MSA-level panel begins in 2005 because the ACS did not consistently identify MSA codes for 2001–2004, and 2000 is excluded due to the lack of continuous coverage.[9] All variables are aggregated to the MSA–year or state–year level using ACS person-weights, producing a unified dataset that links individual-level entrepreneurial outcomes to local housing affordability, income dynamics, credit supply, and labor demand conditions.

This integrated design enables us to study how changes in local housing affordability reshape the composition of entrepreneurship—particularly across tenure and age groups—while controlling for shifts in both credit supply and local economic demand.

4.1 Household Microdata: ACS and CPS

Our primary source of information on entrepreneurship and housing tenure is the American Community Survey (ACS). We use annual ACS microdata from 2000–2019, restricted to individuals aged 20–60. The ACS provides large, representative cross-sections

[8] We use FDIC, SDI, and FDIC Institutions data to characterize the local banking environment.

[9] The ACS began publishing fully consistent MSA identifiers in 2005. Data for 2001–2004 are excluded because MSA identifiers are unavailable, and 2000 is excluded because it does not align with the continuous ACS sampling frame introduced thereafter.

with consistent demographic, labor market, and housing information, which is critical for constructing accurate aggregates at both the state and metropolitan statistical area (MSA) levels. A key advantage of the ACS is that it jointly reports individuals' self-employment status and housing tenure,[10] allowing us to directly examine how entrepreneurship varies between renters and owners within the same dataset. Because of its large sample size, the ACS allows for reliable estimation of entrepreneurship measures even when disaggregated by tenure, age, or demographic group.

Our main outcome variable is the self-employment ratio, defined as the person-weighted share of self-employed individuals within each geography–year cell. We distinguish between incorporated and unincorporated self-employment, following the convention that incorporated self-employment reflects opportunity-driven or growth-oriented activity, while unincorporated self-employment often captures necessity-based work. For each MSA–year (and, in robustness exercises, each state–year), we compute self-employment ratios for four mutually exclusive groups: young renters, young owners, old renters, and old owners. "Young" is defined as individuals below the mean age in each survey year, ensuring balanced group sizes across time.[11] Alternative thresholds, such as age 40, yield similar results. These tenure–age-specific self-employment ratios form the main dependent variables in our analysis.[12]

Following the empirical tradition in the entrepreneurship literature, we treat self-employment as a broad proxy for entrepreneurial activity, while distinguishing between *incorporated* and *unincorporated* forms. This distinction is conceptually important because incorporated self-employment is generally associated with opportunity-driven and growth-oriented entrepreneurship, whereas unincorporated self-employment often captures necessity-based or liquidity-constrained business activity (see Appendix C for detailed discussion and empirical comparisons). Our approach aligns with a long line of studies that use self-employment as a measure of entrepreneurship, beginning with Evans and Leighton (1989), Fairlie (2005), and Fairlie and Meyer (2000), and later refined by work emphasizing differences between subsistence and transformational entrepreneurship.[13]

[10] In both the ACS and CPS, homeownership status is recorded at the household level and thus applies equally to all members of the household. To ensure that ownership reflects genuine ownership rather than household composition, we classify an individual as a homeowner only if the household head or spouse is listed as an owner. Other household members (e.g., adult children living with homeowner parents) are coded as renters. This coding rule prevents misclassification of non-owning individuals within owner households.

[11] Using a fixed cutoff (e.g., age 40) can introduce mechanical demographic trends as the population's age distribution shifts over time. To avoid this concern, we define "young" and "old" relative to each year's sample average, which better captures individuals' relative life-cycle position rather than an arbitrary threshold. See Appendix Figure A.4 for an illustration.

[12] Following standard practice in the entrepreneurship literature, we exclude individuals employed in agricultural production industries (`ind1990 == 010 or 011`) to ensure comparability across urban and non-agricultural sectors.

[13] Appendix C provides an extended review of how self-employment has been used as a proxy for entrepreneurship in the

To complement the ACS, we use the Current Population Survey Annual Social and Economic Supplement (CPS-ASEC), which provides annual microdata with a two-year panel structure. Like the ACS, the CPS-ASEC contains information on both self-employment and housing tenure, but its short panel design allows us to capture transitions between renting and owning, and between wage work and self-employment, over time. While the CPS-ASEC sample size is smaller, its longitudinal structure enables us to document life-cycle patterns of entrepreneurial entry and homeownership, thereby motivating our focus on young versus old households. We also use CPS-based descriptive patterns to cross-validate the ACS-based aggregates.

In additional heterogeneity analysis, presented in the Appendix, we further disaggregate the renter sample by demographic and industry characteristics. These include gender, race, ethnicity, birthplace, and citizenship, as well as industry classifications distinguishing tradable versus non-tradable and asset-heavy versus asset-light sectors. This allows us to examine whether liquidity and housing cost pressures disproportionately constrain certain renter subgroups.

4.2 Housing Prices and Affordability We measure local housing prices using the Zillow Home Value Index (ZHVI), which reports the typical home value across U.S. housing markets. We use the ZHVI All Homes (SFR, Condo/Co-op) series, which provides smoothed and seasonally adjusted median home values (35th–65th percentile range) at the National, State, and Metropolitan Statistical Area (MSA) levels. This consistent multi-level coverage allows us to construct comparable measures of housing prices across geographies and over time. Using these data, we calculate log(HP), demeaned by national trends. An advantage of the ZHVI is that it provides dollar-denominated price estimates that are directly comparable to income measures from the ACS (and CPS-ASEC), enabling a unified computation of housing price-to-income ratios across datasets and geographic levels. [14]

However, relying solely on house prices overlooks a crucial dimension of housing affordability—local income capacity. Two regions with identical home prices may impose vastly different financial burdens on residents depending on their earnings. To account for this heterogeneity, we construct the house

literature, including distinctions between subsistence and transformational entrepreneurship (e.g., Schoar, 2010; Levine and Rubinstein, 2017) and its applications in studies of household wealth, credit access, and local shocks (e.g., Fairlie and Krashinsky, 2012; Kerr and Nanda, 2009).

[14] Appendix Figure A.5 compares the Green Street Commercial Property Price Index (CPPI) with the Zillow Home Value Index (ZHVI), showing similar boom–bust–recovery dynamics in commercial and residential real estate markets over 2000–2019.

price-to-income ratio,

$$\log(\text{HP}/\text{INC}),$$

which normalizes housing cost by local earning power. This measure captures the effective liquidity pressure or affordability constraint faced by households by combining both components of the affordability equation—price and income. Consequently, HP/INC provides a sharper and more behaviorally meaningful proxy for housing burden, particularly across metropolitan areas with divergent income distributions.[15]

4.3 Credit Supply and Local Controls To account for local financing conditions, we incorporate data from the Community Reinvestment Act (CRA) small-business lending files, which report annual loan originations by geography and lender type since 1996. Following Greenstone, Mas, and Nguyen (2020)—henceforth, GMN—and Davis and Haltiwanger (2024), we construct measures of local credit supply using CRA-reported small-business lending intensity at the MSA–year level. Specifically, we compute the total dollar volume of small business loans (to firms with under $1 million in gross revenue) scaled by local employment, providing a proxy for the availability of external financing for small and young firms. This variable reflects the local supply of bank credit that is largely exogenous to individual firm characteristics and captures the intensity of community lending activity.

In integrating these credit data with other sources, we harmonize timing across datasets to ensure comparability: BLS employment and QCEW industry data are annualized on a March-to-March basis, and CRA lending data are aligned to the corresponding calendar year. This alignment minimizes spurious variation due to differences in reporting periods across data sources.[16]

To control for local economic demand, we further use information from the Bureau of Labor Statistics (BLS) and the Quarterly Census of Employment and Wages (QCEW). From the QCEW, we compute Bartik-style local demand shifters by interacting national industry employment growth with local industry shares, providing exogenous variation in local labor demand. We also include MSA-level unemployment rates and population measures to absorb cyclical and demographic effects. Together, these controls ensure that estimated responses to housing affordability shocks are not confounded by

[15] When comparing MSA rankings based on log(HP) versus log(HP/INC), we observe substantial reordering. Appendix Figure A.6 shows a histogram of absolute rank deviations (2005–2019), with a mean difference of 22 ranks and a maximum deviation of 98, underscoring how income normalization substantially reshapes the geography of housing affordability.

[16] Consistent with Davis and Haltiwanger (2024), CRA and QCEW data are integrated using March-based observation windows to ensure that employment and lending shocks are temporally consistent.

concurrent credit supply movements or local demand fluctuations.

4.4 Instruments for Housing Affordability A key empirical challenge in estimating the causal effect of local housing affordability on entrepreneurship is endogeneity. Changes in housing prices may reflect not only supply-side constraints but also local demand shocks—such as population inflows, employment growth, or rising local income—that simultaneously affect entrepreneurial activity. For instance, when a city attracts new residents or experiences strong labor market expansion, both housing demand and opportunities for self-employment may increase, generating an upward bias in OLS estimates.[17] To address this concern, we employ an instrumental-variable (IV) strategy that isolates exogenous variation in housing affordability arising from predetermined local constraints and differential exposure to national housing demand shocks.

Our main instrument follows the approach of Saiz (2010), who quantifies metropolitan housing supply elasticity by combining geographic and regulatory constraints on land development. The Saiz elasticity captures how responsive local housing supply is to demand shocks: areas with high physical or regulatory constraints (e.g., coastal cities or regions with restrictive zoning) exhibit low elasticity, while inland or less-regulated areas display high elasticity. Importantly, this elasticity index is time-invariant and determined by natural geography and long-standing policies, providing a source of quasi-exogenous cross-sectional variation in housing market responsiveness.

As a complementary measure, we draw on Guren, Mckay, Nakamura, and Steinsson (2021), who develop a housing demand sensitivity index that quantifies how responsive local home prices are to national demand shocks. Conceptually, while the Saiz elasticity emphasizes physical and regulatory supply-side constraints, the Guren et al. sensitivity index captures empirically how local prices co-move with nationwide cycles—essentially a reduced-form measure of how tightly local markets transmit national shocks. Both indices thus capture structural heterogeneity in how local housing markets respond to common national drivers, though they differ in construction: the Saiz measure is based on exogenous physical and regulatory features, whereas the Guren index is estimated from empirical price responses.

[17] For example, migration into a booming metropolitan area can raise housing demand and prices while simultaneously creating new local market opportunities for small businesses, making it difficult to disentangle supply-driven price variation from demand-driven entrepreneurship dynamics.

Using these measures, we construct shift–share style instruments of the form:

$$Z_{mt} = (\text{Elasticity}_m) \times \Delta_t \log(\text{HP/INC})^{\text{National}},$$

where $\Delta_t \log(\text{HP/INC})^{\text{National}}$ denotes the national housing demand shock, proxied by changes in the aggregate house price-to-income ratio, and Elasticity_m represents either the Saiz (2010) supply elasticity or the Guren et al. (2021) sensitivity index. This interaction captures how differences in local housing market flexibility amplify or dampen the transmission of national demand shocks.

In the main analysis, we use the Saiz (2010) elasticity as our baseline instrument, given its exogeneity rooted in geography and regulation. As a robustness exercise, we replace it with the Guren et al. (2021) sensitivity index, which offers an alternative, data-driven proxy for local price responsiveness to aggregate demand shifts. Consistent results across these two instruments strengthen our interpretation that the estimated effects are not driven by local demand conditions but by structural differences in housing market constraints. [18]

4.5 Sample Construction and Aggregation The analysis sample includes prime-age individuals (ages 20–60) observed annually from 2000 to 2019. Within each geography–year, we compute self-employment shares for four mutually exclusive groups: young renters, young owners, old renters, and old owners. "Young" is defined relative to the mean age in each survey year to ensure balanced group sizes across time.

The main unit of observation is the MSA–year. For each MSA–year, we merge entrepreneurship outcomes from the ACS with local affordability measures based on Zillow home values and ACS (or CPS) income, CRA-based small-business credit intensity, and labor market indicators from the BLS and QCEW. All datasets are aggregated to the annual frequency using consistent calendar-year definitions, as our variables are drawn from cross-sectional surveys with yearly reference periods. This approach ensures temporal alignment across sources while preserving the representative structure of each dataset.

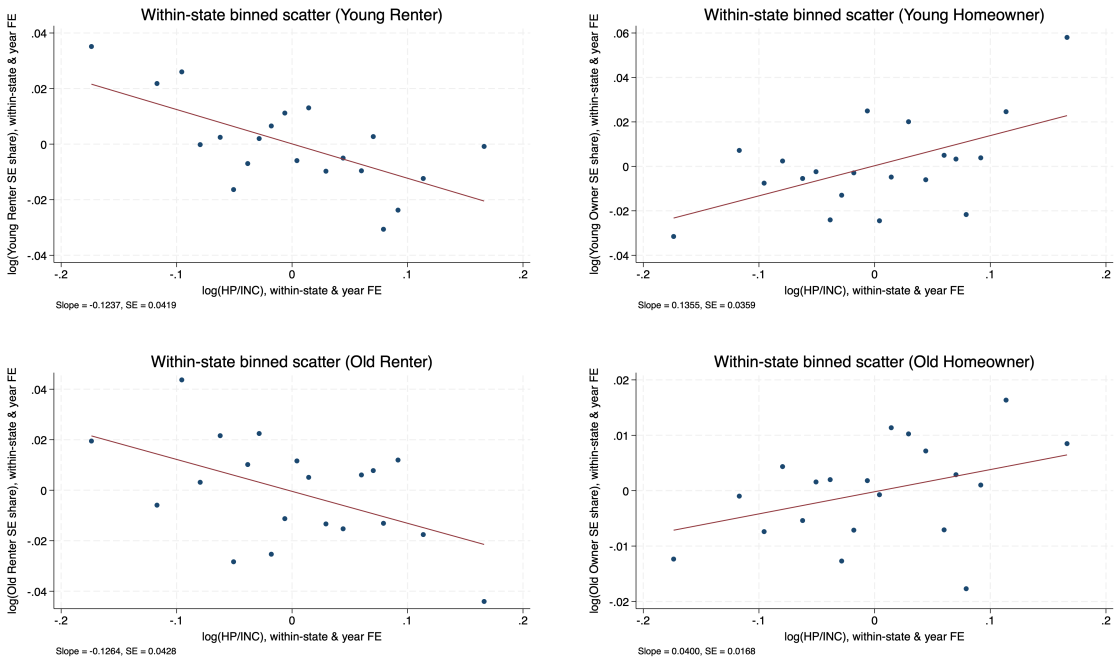
To ensure consistent geographic coverage, we construct a balanced panel of 167 MSAs spanning 2005–2019 (15 years), as the ACS did not consistently identify MSA codes prior to 2005. All variables

[18] Appendix Figure A.7 provides a visual comparison of the two instruments. The figure shows a positive correlation between the Saiz (2010) housing supply elasticity and the Guren et al. (2021) housing demand sensitivity index, confirming their first-stage relevance. However, the two capture distinct mechanisms—geographic and regulatory constraints versus historical price reactivity—reinforcing their use as complementary, not interchangeable, measures of local housing-market structure.

are aggregated using person weights at the MSA–year level. This integrated data structure enables us to examine how local housing affordability, credit supply, and labor market conditions jointly shape entrepreneurship dynamics across metropolitan areas and demographic groups.

4.6 State-Level Evidence Before turning to our main MSA-level regressions, we begin with descriptive evidence at the state level. State-level panels provide a natural starting point: they offer broad geographic coverage and sufficient sample size to examine the composition of entrepreneurship by tenure and age. Moreover, state-level variation is useful for illustrating the empirical patterns that motivate our identification strategy in the next section.

Figure 4.1: Within-State Binned Scatter: HP/INC vs. SE Shares (ACS 2000–2019)



Sample: ACS microdata, 2000–2019, individuals aged 20–60, person-weighted. *Note*: Both axes are residualized with respect to state and year fixed effects. Binned scatter plots (20 equal-sized bins) are shown separately by tenure and age group. The figure shows a clear divergence: housing becomes less affordable (higher HP/INC), self-employment declines for renters but rises for owners.

Figure 4.1 plots binned scatter relationships between housing affordability and self-employment shares across states from 2000 to 2019. On the horizontal axis we measure log(HP/INC), residualized with respect to state and year fixed effects to isolate within-state changes in affordability. On the vertical axis we plot the log of self-employment shares, also residualized on the same fixed effects. We present the results separately for renters and owners, and for young (below the annual mean age) and

old (above the mean age) individuals.

The figure reveals several clear and consistent patterns. First, for renters, there is a pronounced negative relationship between housing affordability and self-employment. Both young and old renters experience lower self-employment shares when the local house price-to-income ratio rises. The slope is steepest for young renters, consistent with the idea that they face the tightest liquidity constraints in markets where housing is less affordable.

Second, for owners, the relationship is reversed: self-employment shares tend to increase as affordability declines. This positive slope is evident for both young and old owners, though again the magnitude is larger for the young. This divergence between renters and owners suggests that rising housing costs simultaneously depress entrepreneurship for one group while stimulating it for another.

Third, the strongest contrast is between young renters and young owners. In states where HP/INC is high, young renters are much less likely to be self-employed, while young owners are more likely to be self-employed. This striking divergence is precisely what one would expect if affordability shocks operate through two distinct channels: a liquidity constraint channel that binds for renters and a collateral channel that benefits owners.

These state-level patterns provide descriptive support for our central hypothesis: housing affordability matters for who becomes an entrepreneur. They also illustrate the limitations of state-level analysis. Although residualizing on state and year fixed effects removes common shocks, unobserved local demand conditions may still confound the relationship. For instance, booming states may simultaneously experience rising house prices, rising incomes, and shifts in industry composition that affect entrepreneurship directly. To address these concerns, in the next section we turn to MSA-level analysis with instrumental variables that exploit exogenous variation in housing supply elasticity.

Taken together, the state-level evidence provides preliminary evidence consistent with our central hypothesis and highlights the divergent experiences of renters and owners, and in particular the vulnerability of young renters to affordability shocks. These patterns provide the empirical foundation for our more formal identification strategy that follows. [19]

[19] Appendix Figures A.8–A.11 provide complementary descriptive evidence based on the CPS. We compute the average housing price-to-income ratio across states over the 2000–2019 period and divide states into five quantiles. The figures compare entrepreneurship and housing outcomes between low (Q1) and high (Q5) HP/INC states, illustrating systematic differences in age profiles, tenure composition, and self-employment patterns. These descriptive contrasts reinforce the state-level patterns reported here.

5 Local Effects of Housing Affordability on Entrepreneurship

5.1 Overview of Estimation and Identification Our empirical strategy builds on the instrumental variable (IV) framework developed by Mian and Sufi (2011) and extended by Davis and Haltiwanger (2024), while adapting it to study the relationship between housing affordability and entrepreneurship. We exploit cross-MSA heterogeneity in housing supply elasticity, originally constructed by Saiz (2010), to isolate plausibly exogenous variation in local housing affordability driven by common national housing market cycles. This design enables us to distinguish affordability-driven entrepreneurship responses from those arising from local demand, credit, or demographic shocks.

While the overall identification logic follows these earlier studies, our approach departs from them in several important respects. First, we measure housing affordability using the ratio of housing prices to local incomes, $\log(\text{HP}/\text{INC})_{mt}$, rather than housing prices alone. This measure captures the relative burden of housing costs faced by local residents and thus provides a more conceptually precise indicator of affordability than price levels or changes in isolation. Second, we estimate the model in *levels* rather than in changes. Whereas Mian and Sufi (2011) and Davis and Haltiwanger (2024) use year-to-year growth in housing prices and young-firm employment as their primary variables, our specification focuses on the log levels of affordability and self-employment. Accordingly, the coefficient of interest captures how differences in long-run affordability—rather than short-run price fluctuations—affect the composition of entrepreneurship across MSAs.

Following Davis and Haltiwanger (2024), we further account for contemporaneous variation in local credit and demand conditions. Specifically, we control for credit-supply shocks using the intensity of small-business lending from the Community Reinvestment Act (CRA) data, labor demand shocks using Bartik-type instruments, and demographic changes through MSA-level population growth. We also include MSA and year fixed effects to absorb time-invariant regional characteristics and national trends. Together, these controls ensure that our estimated effects of housing affordability are orthogonal to other local economic dynamics that might simultaneously influence entrepreneurship and housing markets.

Finally, although the main analysis instruments local housing affordability with the Saiz (2010) housing-supply elasticity interacted with national housing cycles, we also conduct a robustness check using the housing price-sensitivity index from Guren, Mckay, Nakamura, and Steinsson (2021). This alternative measure captures how local markets historically transmit national boom–bust cycles into

local prices, providing an additional validation that our results are not specific to a single elasticity measure.

5.2 Empirical Specification The empirical specification closely follows the standard two-stage least squares (2SLS) structure. We estimate the following system at the MSA-year level:

$$Y_{mt} = \sum_m \lambda_m I_m + \sum_t \lambda_t I_t + \beta \log(\text{HP/INC})_{mt} + \chi \mathbf{SBL}_{mt} + \mathbf{X}'_{mt}\theta + \varepsilon_{mt}, \tag{2nd}$$

$$\log(\text{HP/INC})_{mt} = \sum_m \delta_m I_m + \sum_t \delta_t I_t + \log(\text{HP/INC})_t \mathbf{Z}'_m \gamma + \psi \mathbf{SBL}_{mt} + \mathbf{X}'_{mt}\phi + \eta_{mt}, \tag{1st}$$

In these equations, Y_{mt} denotes the log of the self-employment share for a given age–tenure group in MSA m and year t, while $\log(\text{HP/INC})_{mt}$ represents the log of the local housing price-to-income ratio, our primary measure of affordability. The term $\mathbf{Z}_m$ is a cubic polynomial in the log of the Saiz (2010) housing-supply elasticity, interacted with the national housing affordability index $\log(\text{HP/INC})_t$, thereby creating time-varying exposure to common national housing shocks. $\mathbf{SBL}_{mt}$ captures small-business lending intensity from the CRA data, serving as a proxy for local credit-supply shocks. $\mathbf{X}_{mt}$ includes time-varying MSA-level controls such as Bartik-type labor-demand shifters, unemployment rates, and population growth. The terms I_m and I_t denote MSA and year fixed effects, respectively, and standard errors are clustered at the MSA level.

The coefficient β measures how differences in local housing affordability affect the composition of entrepreneurship across MSAs, after accounting for credit availability and demand-side factors. We control for local credit-supply conditions using a small-business lending measure constructed from the Community Reinvestment Act (CRA) data, following Davis and Haltiwanger (2024).[20] The next subsection details the construction of the instrumental variable and discusses the identification strategy underlying equations (1st) and (2nd).

5.3 IV Design and Identification Strategy A key challenge in estimating the causal impact of housing affordability on entrepreneurship is the potential endogeneity of local housing prices and incomes. Local housing affordability, measured by the ratio of housing prices to local income, may be correlated with unobserved local conditions that simultaneously influence entrepreneurship. For

[20] Appendix D provides detailed information on the construction of the CRA-based small-business lending (SBL) variable, which aggregates bank-level lending data to the MSA-year level and isolates exogenous shifts in credit supply using a Bartik-style approach.

instance, areas experiencing strong economic growth or a surge in entrepreneurial activity may attract new residents, driving up housing demand and, consequently, local housing prices. Similarly, an inflow of high-income workers could both reduce measured housing affordability and increase self-employment opportunities through local demand spillovers. Finally, measurement error in local price or income indices could further bias the estimated relationship between affordability and entrepreneurship. To address these concerns, we adopt an instrumental variable (IV) strategy designed to isolate variation in housing affordability that arises from exogenous differences in housing supply constraints across MSAs.

Our IV design builds on the approach developed by Saiz (2010) and extended by Davis and Haltiwanger (2024). We interact a time-invariant measure of local housing supply elasticity with national fluctuations in housing market conditions to generate exogenous variation in local affordability. Formally, we define the instrument as

$$Z_{m,t}^{(k)} = \left(\log \frac{\text{HP}}{\text{INC}}\right)_t^{National} \times (\text{Saiz elasticity})_m^k, \quad k = 1, 2, 3, \tag{5.1}$$

where $(\text{Saiz elasticity})_m$ captures long-run constraints on housing supply at the MSA level, and $\left(\log \frac{\text{HP}}{\text{INC}}\right)_t^{National}$ represents the aggregate national housing affordability cycle. Because the Saiz elasticity is time-invariant, its interaction with the national affordability cycle produces differential shocks across MSAs that are plausibly exogenous to local entrepreneurial conditions. Following Davis and Haltiwanger (2024), we allow for higher-order polynomial terms in elasticity ($k = 1, 2, 3$) to account for potential nonlinearities in price responses to supply constraints.[21]

The identification logic is as follows. National cycles in housing affordability provide common aggregate shocks to housing markets, while cross-MSA heterogeneity in supply elasticity distributes these shocks differentially across space. This approach effectively treats national housing cycles as a common shock, while the Saiz elasticity acts as a local amplifier that determines the magnitude of each MSA's exposure. In MSAs with more inelastic housing supply, national upswings in prices translate into disproportionately larger increases in the local price-to-income ratio, tightening affordability. In contrast, in more elastic markets, housing prices respond less to the same national demand shocks,

[21] Empirical evidence in Saiz (2010) and Davis and Haltiwanger (2024) shows that housing price responses vary nonlinearly with supply elasticity. Including quadratic and cubic terms substantially improves the explanatory power of the first stage across heterogeneous MSAs. The baseline first stage uses a cubic in the log Saiz elasticity. Results are similar when using linear or quadratic polynomials: first-stage F-statistics exceed conventional thresholds, and second-stage coefficients are quantitatively close to the baseline.

mitigating affordability pressures. Since the Saiz elasticity is predetermined and unrelated to contemporary local economic dynamics, the interaction term serves as an exogenous source of variation in local affordability.[22]

This logic parallels the shift–share design of Mian and Sufi (2011), but our use of the price-to-income ratio, rather than housing prices alone, provides a more precise measure of affordability shocks that matter for entrepreneurial entry.

Our empirical implementation therefore isolates exogenous changes in housing affordability—arising from interactions between national cycles and local supply constraints—while controlling for local credit supply, labor demand, and demographic trends. This strategy allows us to interpret the estimated coefficient on $\log(\text{HP}/\text{INC})_{mt}$ as capturing the causal effect of affordability-driven housing cost pressures on entrepreneurship, rather than reflecting endogenous local economic dynamics.

5.4 IV Validity: Potential Threats, Relevance, and Exclusion Restriction

A valid instrumental variable must satisfy both relevance and exogeneity conditions. In this context, our instrument—constructed from the interaction between the national housing affordability cycle and local housing-supply elasticity—captures plausibly exogenous variation in local housing affordability. Nevertheless, several potential threats to identification merit discussion.

Potential Threats to Identification. First, local demand shocks could simultaneously influence both housing prices and entrepreneurship. For example, a boom in local industries or an influx of high-productivity firms could raise both house prices and self-employment opportunities. To mitigate this concern, we include Bartik-type local demand controls that interact national industry employment growth rates with the MSA's initial industry composition, following Davis and Haltiwanger (2024). Second, population inflows may drive up both housing prices and entrepreneurship by increasing local market size. We therefore control for MSA-level population growth, which captures migration-driven demand shocks in local housing and labor markets. Third, unobserved local trends correlated with housing supply elasticity may bias our estimates. For instance, long-term urban development policies or geographic amenities could both affect supply elasticity and local business formation. Following Davidoff

[22] Empirical evidence in Davidoff (2016) supports this assumption: U.S. metropolitan areas with lower housing supply elasticity experienced substantially larger housing price run-ups during the 2000s boom and sharper declines during the subsequent bust, consistent with exogenous supply constraints amplifying common national shocks. This validation of the Saiz (2010) measure reinforces its use as a plausibly exogenous source of local housing price variation.

(2016), we mitigate these risks by including MSA and year fixed effects, which absorb time-invariant regional characteristics and common national shocks.

Exclusion Restriction. Conditional on these controls, the Saiz (2010) elasticity affects self-employment only through its impact on local housing affordability. In other words, once we account for credit-supply shocks, local demand shifts, and demographic changes, there is no remaining direct channel linking supply elasticity to entrepreneurship. This restriction is consistent with the identification assumptions used in Mian and Sufi (2011) and Davis and Haltiwanger (2024).

Relevance. The instrument is strongly correlated with local housing affordability. During national housing booms, MSAs with tighter supply constraints (lower elasticity) experience disproportionately larger increases in the price-to-income ratio, while more elastic MSAs exhibit muted responses. This differential exposure ensures a strong first-stage relationship between the instrument and local affordability. In practice, the cubic specification produces large first-stage F-statistics (greater than 10), confirming the statistical relevance of the instrument.

Taken together, these considerations support the validity of our IV design. By controlling for contemporaneous local economic forces and leveraging cross-MSA heterogeneity in housing supply elasticity, our empirical framework isolates exogenous variation in housing affordability that is orthogonal to unobserved local entrepreneurial determinants.

5.5 Main Results and Link to Theoretical Mechanisms

The preceding sections outlined the empirical specification and the instrumental variable strategy designed to identify the causal impact of housing affordability on entrepreneurship. Having established the validity of this identification framework, we now examine how differences in local housing costs translate into changes in entrepreneurial activity across metropolitan areas. The key coefficient of interest, β in equation (2nd), measures how variations in the local housing price-to-income ratio affect the share of individuals who are self-employed. Based on the model's decision rules developed earlier, we expect affordability shocks to influence entrepreneurship through two opposing mechanisms: a liquidity constraint channel that discourages entry among renters facing higher rent burdens, and a collateral channel that promotes entry among homeowners as rising house values relax borrowing limits. We further anticipate stronger effects among younger individuals, who typically face tighter credit constraints and have less accumulated wealth.

Table 5.1: Effects of Local Housing Affordability on Entrepreneurship

	Renter	Homeowner	Young		Old	
	(1)	(2)	(3) Renter	(4) Homeowner	(5) Renter	(6) Homeowner
Panel A: Incorporated Self-Employment (IV vs OLS)						
IV: Coeff. on log(HP/INC)	-0.7792*	-0.0409	-0.3564	0.7718**	-1.1212***	-0.1869
	(0.4245)	(0.1340)	(0.4990)	(0.3402)	(0.3799)	(0.1593)
OLS: Coeff. on log(HP/INC)	-0.1829	-0.0119	-0.0678	0.2805**	-0.2941*	-0.0594
	(0.1240)	(0.0668)	(0.1433)	(0.1292)	(0.1502)	(0.0730)
Observations	2,336	2,436	2,167	2,386	2,162	2,436
F-test for excl. instruments	28.36	28.37	28.31	27.78	27.78	28.37
Panel B: Unincorporated Self-Employment (IV vs OLS)						
IV: Coeff. on log(HP/INC)	-0.7015***	0.0910	-0.8414***	0.6783**	-0.5259**	0.0211
	(0.2365)	(0.0919)	(0.2922)	(0.3084)	(0.2520)	(0.1064)
OLS: Coeff. on log(HP/INC)	-0.2751***	0.0498	-0.2144*	0.1572*	-0.3282***	0.0385
	(0.0795)	(0.0352)	(0.1221)	(0.0936)	(0.0988)	(0.0420)
Observations	2,429	2,436	2,405	2,426	2,407	2,436
F-test for excl. instruments	28.36	28.37	29.12	28.12	29.59	28.37

Note: Sample includes ACS microdata, 2000 - 2019, Aged 20 - 60. Robust standard errors clustered at MSA level. All regressions include a rich set of controls: MSA fixed, Year fixed, MSA Bartik demand controls, and MSA population growth. Dependent variable is log share of self-employment (incorporated / unincorporated) by age–tenure cell.

Table 5.1 presents the estimated effects of local housing affordability on self-employment, distinguishing between renters and homeowners as well as between younger and older age groups. All specifications exhibit strong instrument relevance, with first-stage F-statistics exceeding 27 across columns, well above conventional weak-instrument thresholds. Relative to OLS, the IV estimates are larger in magnitude for renters and more positive for young owners, consistent with attenuation from measurement error in affordability and downward bias from endogenous local conditions.

The results reveal pronounced heterogeneity across both tenure and age groups. The sign pattern across tenure–age cells mirrors the model's decision rule: negative when liquidity constraints bind (renters, especially the young) and positive when collateral constraints relax (young owners), with attenuated effects for older groups.

Among young renters, higher housing costs are associated with a large and statistically significant decline in unincorporated self-employment, while the relationship is weaker for incorporated forms. A 10 percent increase in the housing price-to-income ratio lowers the unincorporated self-employment share by about 8.4 percent, significant at the one-percent level. This pattern aligns closely with the liquidity constraint mechanism derived from the model's decision rule. When rents rise, disposable income and expected entrepreneurial wealth fall, reducing the individual's ability to pay fixed start-up costs or

service potential debt. In the model, this pushes the renter's optimal occupational choice below the entrepreneurship threshold, since the expected utility gain from entry declines sharply once liquidity constraints tighten. Consequently, even small rent increases can crowd out low-capital, necessity-driven self-employment, particularly among young individuals with limited savings. The weaker response of incorporated self-employment is consistent with the higher financial barriers associated with formal firm registration: liquidity-constrained renters rarely reach the capital requirement margin at which this form of entry becomes feasible, regardless of local affordability conditions.

For young homeowners, the estimated coefficients are positive and statistically significant for both incorporated and unincorporated self-employment. A 10 percent increase in the housing price-to-income ratio raises incorporated self-employment by roughly 7.7 percent and unincorporated self-employment by about 6.8 percent. These effects map directly to the collateral channel emphasized in the theoretical model. As housing prices rise, owners experience an appreciation of home equity, which expands their borrowing capacity against collateralizable assets. In the model's decision rule, this outward shift in the borrowing constraint raises the expected return to entrepreneurship by easing financing of start-up costs and smoothing potential income risk. The fact that the effects are strongest for younger owners is also consistent with theory: they face tighter credit limits ex ante and thus benefit disproportionately when collateral values increase. This positive response indicates that homeownership allows young individuals to convert housing wealth into business capital when credit markets are imperfect.

Older renters also exhibit negative effects of rising housing costs, though the magnitudes are smaller than those observed among younger renters. A 10 percent increase in the housing price-to-income ratio is associated with an estimated 5 to 6 percent decline in self-employment, depending on business type. This muted response accords with the model's prediction that, as individuals age and accumulate financial wealth, their liquidity constraint becomes less binding. Older renters typically hold greater savings buffers or access to family wealth, allowing them to absorb rent increases without drastically reducing entrepreneurial investment. Hence, while the liquidity mechanism remains operative, its quantitative impact diminishes over the life cycle.

Older homeowners, by contrast, display small and statistically insignificant coefficients. This outcome is also consistent with the theoretical framework. At later stages of life, housing wealth constitutes a relatively stable component of net worth, but older owners are less likely to leverage it to finance new ventures due to lower risk tolerance and shorter expected planning horizons. In the model, they operate

in a region where neither borrowing constraints nor liquidity shocks substantially alter the entry condition, implying that housing wealth serves more as a store of value than as a productive form of collateral. Therefore, housing market fluctuations exert little influence on entrepreneurial decisions among older owners.

Taken together, the results provide strong empirical validation for the mechanisms articulated in the model. Housing affordability affects entrepreneurship primarily through financial constraints, with the direction and magnitude of the effect depending on both tenure status and life-cycle stage. Rising housing costs discourage entrepreneurship among renters—especially younger ones—through tighter liquidity constraints, while encouraging entrepreneurship among homeowners by relaxing collateral-based borrowing limits. These patterns underscore that housing markets shape not only residential choices but also occupational mobility and business creation, ultimately influencing the dynamism and inclusiveness of urban economies.

We next examine the robustness of these patterns to alternative measures of market responsiveness and macro episodes, and explore within-renter heterogeneity to assess whether liquidity frictions bite more strongly for vulnerable groups and sectors.

6 Robustness Checks

We assess the robustness of the main results along two key dimensions. First, we replace the Saiz-based instruments with the housing price sensitivity index of Guren, Mckay, Nakamura, and Steinsson (2021). This index summarizes how national housing cycles historically transmit into local prices and provides an alternative source of cross-MSA exposure. Using the same two-stage structure and controls as in the baseline, we obtain similar elasticities for all tenure–age cells and strong first-stage statistics.

Second, we re-estimate the models excluding the Global Financial Crisis (2008–2011). This removes the most turbulent macro episode from the sample while preserving meaningful variation in affordability. The estimated coefficients remain close to the baseline magnitudes and preserve the same sign pattern across renters and owners, suggesting that our findings are not driven by crisis-period dynamics.

Together, these exercises confirm that our main conclusions are not sensitive to the specific instrument choice or to the inclusion of the most extreme macroeconomic period. The results consistently indicate that higher local housing costs reduce entrepreneurial entry among renters—especially young renters—while raising it among homeowners through collateral channels. Hence, the observed patterns are structural rather than episodic and are robust to alternative identification strategies and sample restrictions.

6.1 Housing Price Sensitivity as an Alternative Instrument

To verify that our findings are not specific to the Saiz-based measure of housing supply elasticity, we construct an alternative instrument based on the *housing price sensitivity index* developed by Guren, Mckay, Nakamura, and Steinsson (2021). This index captures the historical responsiveness of local housing prices to regional or division-level housing market cycles. [23] While the Saiz elasticity reflects long-run physical and regulatory constraints on housing supply, the sensitivity index reflects how strongly local prices have historically reacted to common demand and credit shocks. Hence, the two measures capture distinct but complementary dimensions of housing market behavior—structural constraints versus historical responsiveness.

Conceptually, both instruments exploit the differential response of local markets to common national or regional housing demand shocks. However, their empirical foundations differ. The Saiz elasticity is a geography-based, time-invariant measure derived from exogenous variation in land availability

[23] See Appendix E for details on the construction and estimation of the housing price sensitivity index.

and topography. In contrast, the sensitivity index is a reduced-form estimate obtained from a long panel regression of local house price growth on regional house price growth, controlling for local and regional fixed effects. A higher sensitivity indicates that a metropolitan area's prices tend to move more strongly with the regional cycle, which often—but not always—corresponds to areas with tighter supply constraints or stronger demand amplification mechanisms. Because it is estimated from historical pre-sample data with a leave-out buffer around the target period, the sensitivity index captures persistent market characteristics while avoiding look-ahead bias.

Following the logic in Davis and Haltiwanger (2024), we treat the sensitivity index as an alternative source of quasi-experimental exposure to aggregate housing shocks. We construct an instrument by interacting a polynomial in the estimated sensitivity measure with contemporaneous regional or division-level housing price growth. This shift–share design mirrors our baseline Saiz-based specification, ensuring that the only difference lies in how local exposure to national housing cycles is parameterized. Intuitively, metropolitan areas that have historically exhibited greater price sensitivity will experience larger predicted changes in affordability when national housing prices rise, even when underlying local fundamentals remain fixed.

The identification logic parallels that of the Saiz-based instrument. Because both the sensitivity index and the regional housing cycle are predetermined with respect to current local entrepreneurial conditions, their interaction generates plausibly exogenous variation in local affordability. Conditional on MSA and year fixed effects and our controls for local demand and credit conditions, this instrument affects entrepreneurship only through its influence on local housing prices. The exclusion restriction, therefore, rests on the assumption that historical responsiveness to regional cycles does not directly predict current entrepreneurship trends once we account for observed fundamentals. As shown by Davis and Haltiwanger (2024), substituting the sensitivity-based exposure for the Saiz-based one yields similar patterns in firm formation and employment dynamics, supporting the validity of this approach. In our setting, this alternative instrument produces first-stage estimates that are both strong and stable, and second-stage coefficients that closely resemble the baseline results, reinforcing the robustness of our conclusions.

For comparability with the baseline, we keep the estimating equations (1st)–(2nd) unchanged and only replace the instrument. Let Sens_m denote the time-invariant housing price sensitivity for MSA m estimated on a pre-sample as in Guren, Mckay, Nakamura, and Steinsson (2021). We construct a

shift–share instrument by interacting a polynomial in Sens_m with the common affordability shock:

$$Z_{m,t}^{(k)} \;=\; \Big(\log(\mathrm{HP}/\mathrm{INC})\Big)_t^{\text{National}} \times \big(\mathsf{Sens}_m\big)^k, \quad k \in \{1,2,3\}. \tag{6.1}$$

In the first stage, $\log(\mathrm{HP}/\mathrm{INC})_{mt}$ is instrumented with $\{Z_{m,t}^{(1)}, Z_{m,t}^{(2)}, Z_{m,t}^{(3)}\}$ in place of the Saiz-based polynomial interactions; the second stage and the full set of controls (CRA small-business lending, Bartik demand, population growth, unemployment) remain identical to the baseline.[24]

The estimation is performed on a balanced panel of 166 metropolitan areas observed over 15 years (2005–2019). This sample is nearly identical to that used in the baseline Saiz-based IV regressions, with the only difference being the exclusion of Dover, DE, which is excluded in Guren, Mckay, Nakamura, and Steinsson (2021) and thus lacks a corresponding sensitivity index.

Table 6.1 presents the robustness analysis using the housing price sensitivity index developed by Guren, Mckay, Nakamura, and Steinsson (2021) as an alternative source of exogenous variation in local housing affordability. The instrument performs very well empirically: across all specifications, the first-stage F-statistics exceed conventional thresholds by a wide margin, suggesting that the sensitivity-based exposure captures meaningful and systematic cross-MSA differences in how national housing cycles translate into local affordability. This ensures that the observed effects are not driven by weak-instrument concerns or spurious correlations in local price growth.

Compared with the baseline results that rely on the elasticity-based instrument of Saiz (2010), the overall magnitude and sign of the estimated coefficients remain remarkably stable. For both incorporated and unincorporated self-employment, the point estimates obtained from the sensitivity-based IV are within the confidence bands of the baseline estimates. The results continue to show a strong negative elasticity of entrepreneurship with respect to housing affordability among renters, alongside positive or near-zero responses among homeowners. These similarities demonstrate that the empirical findings are not specific to the particular definition of housing-market frictions—whether measured by physical supply constraints or by historical price responsiveness.

[24] Davis and Haltiwanger (2024) implement the sensitivity-based instrument using a quadratic polynomial. We use a cubic polynomial to keep the specification aligned with our Saiz-based baseline; coefficients and first-stage strength are virtually unchanged with linear or quadratic versions.

Table 6.1: Robustness: Using the Housing Price Sensitivity Index

	Renter	Homeowner	Young		Old	
	(1)	(2)	(3) Renter	(4) Homeowner	(5) Renter	(6) Homeowner
Panel A: Incorporated Self-Employment						
IV(S): Coeff. on log(HP/INC)	-0.5265**	0.1332	-0.2879	0.8821***	-0.5936**	-0.0153
	(0.2237)	(0.0969)	(0.3151)	(0.2385)	(0.2563)	(0.1004)
IV: Coeff. on log(HP/INC)	-0.7792*	-0.0409	-0.3564	0.7718**	-1.1212***	-0.1869
	(0.4245)	0.1340	(0.4990)	(0.3402)	(0.3799)	(0.1593)
OLS: Coeff. on log(HP/INC)	-0.1829	-0.0119	-0.0678	0.2805**	-0.2941*	-0.0594
	(0.1240)	0.0668	(0.1433)	(0.1292)	(0.1502)	(0.0730)
Observations	2,326	2,425	2,160	2,375	2,152	2,425
F-test for excl. instruments	78.33	79.33	80.67	78.24	94.79	79.33
Panel B: Unincorporated Self-Employment						
IV(S): Coeff. on log(HP/INC)	-0.4669***	0.1724***	-0.3556*	0.5716***	-0.5806***	0.1397**
	(0.1227)	(0.0605)	(0.1996)	(0.2032)	(0.1544)	(0.0694)
IV: Coeff. on log(HP/INC)	-0.7015***	0.0910	-0.8414***	0.6783**	-0.5259**	0.0211
	(0.2365)	0.0919	(0.2922)	(0.3084)	(0.2520)	(0.1064)
OLS: Coeff. on log(HP/INC)	-0.2751***	0.0498	-0.2144*	0.1572*	-0.3282***	0.0385
	(0.0795)	0.0352	(0.1221)	(0.0936)	(0.0988)	(0.0420)
Observations	2,418	2,425	2,394	2,415	2,397	2,425
F-test for excl. instruments	79.35	79.33	79.32	78.43	79	79.33

Notes: Robust standard errors clustered at the MSA level. All regressions include MSA fixed effects, year fixed effects, Bartik demand controls, and MSA population growth. The dependent variable is the log share of self-employment (incorporated / unincorporated) by age–tenure cell. "IV(S)" uses the sensitivity-based instrument; "IV" uses the Saiz-based instrument. Sample: balanced panel of 166 MSAs, 2005–2019 (Dover, DE excluded due to missing sensitivity index in Guren, Mckay, Nakamura, and Steinsson, 2021). Observation counts and F-statistics correspond to regressions using the housing price sensitivity index as the instrumental variable.

The economic interpretation also remains consistent with the theoretical mechanism proposed in Section 3. When local housing becomes less affordable, renters—especially younger ones—face tighter liquidity constraints, leading to a decline in both incorporated and unincorporated business formation. In contrast, among young homeowners, higher house prices increase collateral value and wealth, stimulating entrepreneurial entry through enhanced borrowing capacity. This asymmetric response across tenure groups highlights the dual role of housing markets in shaping local economic opportunity: while homeownership can relax borrowing constraints, rising rents suppress risk-taking among liquidity-constrained renters.

Finally, the persistence of these patterns across two distinct identification strategies reinforces the

credibility of the main findings. By substituting a demand-driven sensitivity measure for a supply-driven elasticity measure, the results show that the estimated relationships are not artifacts of local geography, regulatory environments, or unobserved demand shocks. Rather, they reflect a robust causal mechanism linking changes in local housing affordability to entrepreneurial decisions through heterogeneous financial constraints. Taken together, these findings strengthen the interpretation that affordability shocks play a first-order role in shaping local entrepreneurial dynamism in U.S. metropolitan areas.

In the following subsection, we re-estimate the baseline IV specification excluding the years 2008–2011 to verify that the observed relationships are not artifacts of crisis-driven dynamics.

6.2 Excluding the Global Financial Crisis (2008–2011)

One concern is that our estimated effects might be driven by the extraordinary macroeconomic conditions surrounding the Global Financial Crisis (GFC) rather than by structural relationships between housing affordability and entrepreneurship. The years 2008–2011 witnessed a sharp collapse in housing markets, widespread foreclosures, credit tightening, and unprecedented monetary and fiscal interventions. If our results are primarily capturing these exceptional dynamics, the policy relevance for normal times would be limited.

To address this issue, we re-estimate our baseline specification after excluding the GFC period (2008–2011) from the sample. This exclusion removes both the steep national housing price decline and the subsequent recovery phase, allowing us to focus on periods of more typical housing market fluctuations. The estimation sample therefore covers 2005–2007 and 2012–2019, preserving both pre-crisis and post-crisis observations while removing the four years of extreme volatility. All other model components—including the instrumental variable design, fixed effects, and control variables—remain identical to the baseline specification.

The exclusion of the GFC period slightly reduces overall variation in national housing affordability shocks, leading to somewhat wider confidence intervals. However, the pattern of estimated coefficients remains strikingly similar to the baseline. For young renters, higher housing costs continue to significantly reduce self-employment, while for owners, the estimated effects remain positive and statistically robust. The consistency of these findings indicates that the main results are not driven by crisis-specific credit frictions or macroeconomic dislocations, but rather reflect underlying structural channels linking housing affordability to entrepreneurial entry.

Table 6.2: Robustness: Excluding the Global Financial Crisis (2008–2011)

	Renter	Homeowner	Young		Old	
	(1)	(2)	(3) Renter	(4) Homeowner	(5) Renter	(6) Homeowner
Panel A: Incorporated Self-Employment						
Exc. GFC: log(HP/INC)	-0.7193	-0.0179	-0.2478	0.7226**	-1.0888***	-0.1960
	(0.4611)	(0.1334)	(0.5516)	(0.3524)	(0.4023)	(0.1780)
IV(S): log(HP/INC)	-0.5265**	0.1332	-0.2879	0.8821***	-0.5936**	-0.0153
	(0.2237)	0.0969	(0.3151)	(0.2385)	(0.2563)	(0.1004)
IV: log(HP/INC)	-0.7792*	-0.0409	-0.3564	0.7718**	-1.1212***	-0.1869
	(0.4245)	0.1340	(0.4990)	(0.3402)	(0.3799)	(0.1593)
OLS: log(HP/INC)	-0.1829	-0.0119	-0.0678	0.2805**	-0.2941*	-0.0594
	(0.1240)	0.0668	(0.1433)	(0.1292)	(0.1502)	(0.0730)
Observations	1,716	1,785	1,585	1,742	1,589	1,785
F-test for excl. instruments	26.53	25.56	30.44	25.12	24.97	25.56
Panel B: Unincorporated Self-Employment						
Exc. GFC: log(HP/INC)	-0.8238***	0.1422	-0.8943***	0.8448***	-0.6427**	0.0165
	(0.2531)	(0.1007)	(0.2885)	(0.3068)	(0.2496)	(0.1216)
IV(S): log(HP/INC)	-0.4669***	0.1724***	-0.3556*	0.5716***	-0.5806***	0.1397**
	(0.1227)	0.0605	(0.1996)	(0.2032)	(0.1544)	(0.0694)
IV: log(HP/INC)	-0.7015***	0.0910	-0.8414***	0.6783**	-0.5259**	0.0211
	(0.2365)	0.0919	(0.2922)	(0.3084)	(0.2520)	(0.1064)
OLS: log(HP/INC)	-0.2751***	0.0498	-0.2144*	0.1572*	-0.3282***	0.0385
	(0.0795)	0.0352	(0.1221)	(0.0936)	(0.0988)	(0.0420)
Observations	1,778	1,785	1,760	1,775	1,764	1,785
F-test for excl. instruments	25.54	25.56	26.44	25.24	26.02	25.56

Notes: Robust standard errors clustered at the MSA level. All regressions include MSA fixed effects, year fixed effects, Bartik demand controls, and MSA population growth. The dependent variable is the log share of self-employment (incorporated / unincorporated) by age–tenure cell. "Exc. GFC" indicates regressions estimated on a restricted sample that excludes the Global Financial Crisis period (2008–2011), covering only 2005–2007 and 2012–2019. "IV(S)" and "IV" denote the sensitivity-based and Saiz-based instruments, respectively. Observation counts and first-stage F-statistics correspond to regressions estimated on the GFC-excluded sample.

Table 6.2 presents the results from excluding the Global Financial Crisis (GFC) years, focusing on whether the main patterns are driven by the extraordinary housing and credit market conditions of 2008–2011. The overall results remain highly consistent with the baseline estimates. The first-stage F-statistics remain well above conventional thresholds, indicating that the instrument continues to be strongly relevant even when the crisis period is omitted. Coefficient magnitudes and signs across renter and homeowner groups, as well as between young and old cohorts, exhibit the same structure as in the

baseline analysis.

For both incorporated and unincorporated self-employment, higher local housing price-to-income ratios continue to significantly reduce entrepreneurship among renters while modestly increasing it among homeowners. The effects are particularly pronounced for young renters, whose self-employment rate remains negatively and significantly associated with worsening housing affordability. This persistence suggests that the mechanisms identified earlier—the liquidity-constraint channel for renters and the collateral channel for owners—are not artifacts of crisis-induced financial dislocations.

Overall, the exclusion of 2008–2011 does not materially alter the estimated relationship between local housing affordability and entrepreneurship. This robustness check reinforces the interpretation that the observed effects reflect structural rather than cyclical forces, and that our findings capture enduring behavioral responses to local housing cost pressures rather than temporary dynamics specific to the Global Financial Crisis period.

Having established robustness to the instrument choice and to excluding the crisis period, the next section examines *within-renter heterogeneity* to identify who is most affected and in which activities the effects are concentrated.

7 Within-Renter Heterogeneity

We next explore whether the renter-side responses are concentrated among groups for whom liquidity frictions are plausibly strongest. To this end, we estimate specifications that mirror equation (2nd) but interact the affordability variable with indicators for demographic subgroups and, alternatively, with industry characteristics, while retaining the full set of controls and fixed effects.

Demographics. We split the renter sample by gender, race, ethnicity, nativity, and citizenship status. The negative elasticity is systematically larger in magnitude for groups that, on average, face tighter credit access and thinner financial buffers. In particular, the response is more negative among non-citizens and among groups with lower median wealth in survey data, consistent with stronger liquidity constraints. These patterns are in line with the model's mechanism that affordability shocks suppress entry when the borrowing or cash-on-hand constraint binds.

Industry. We also stratify by tradable versus non-tradable activity and by asset-light versus asset-heavy sectors. The estimated elasticities are more negative in asset-light and non-tradable activities, where low-capital, necessity-driven self-employment is more prevalent and cash-flow pressures are more immediate. This is consistent with the model's prediction that affordability shocks primarily crowd out entry at the low fixed-cost margin among renters.

Across all splits, instrument strength remains high and the core sign pattern—negative for renters, positive for young owners—persists. These results reinforce the interpretation that liquidity mechanisms, rather than sectoral composition or unobserved local trends, drive the renter-side responses. Together, these exercises enable us to test whether the affordability–entrepreneurship link arises from systematic liquidity constraints rather than unobserved local shocks.

7.1 Demographic Heterogeneity among Renters

The aggregate renter response masks substantial heterogeneity across demographic groups that differ in their financial capacity and access to credit. While the baseline estimates show that higher local housing costs reduce entrepreneurial entry among renters, it is important to understand *who* within the renter population is most affected. This question matters not only for identifying the mechanism—liquidity constraints versus preferences—but also for assessing the broader distributional implications of housing affordability on economic opportunity.

To this end, we re-estimate equation (2nd) by interacting the affordability measure with indicators for key demographic attributes, including gender, race, ethnicity, birthplace, and citizenship status. These splits allow us to isolate how affordability shocks propagate through pre-existing socioeconomic inequalities. Across demographic splits, renter elasticities are generally negative while owner elasticities are often positive, but the strength of responses is heterogeneous. For several major demographic groups such as White or Asian renters, the negative response is sizable and statistically significant, whereas for others (e.g., non-citizen or Hispanic renters in our sample), point estimates are negative but imprecise. This pattern highlights that liquidity constraints matter on average for renters, yet measured subgroup differences also reflect sampling variability and the depth of financial buffers rather than occupational preferences.

Table 7.1: Local Housing Affordability Impact on Entrepreneurship by Demographic Group and Tenure

Panel A: Incorporated Self-Employment												
	Female		Male		Black		Asian		White			
	Renter	Owner	Renter	Owner	Renter	Owner	Renter	Owner	Renter	Owner		
log(HP/INC)	-1.0782**	0.0134	-0.6671	-0.1483	0.2372	0.3914	-0.6164	-0.1801	-0.8838**	-0.0414		
	(0.4608)	(0.2168)	(0.4344)	(0.1677)	(0.6445)	(0.4361)	(0.7351)	(0.5068)	(0.4457)	(0.1439)		
Observations	2,063	2,422	2,258	2,436	1,272	1,400	1,014	1,745	2,286	2,436		
F-test	30.02	27.97	27.50	28.37	21.49	27.51	17.26	27.36	28.95	28.37		
	Hispanic		Non-Hispanic		US Born		Non-US Born		US Citizen		Non-US Citizen	
	Renter	Owner	Renter	Owner	Renter	Owner	Renter	Owner	Renter	Owner	Renter	Owner
log(HP/INC)	-0.1294	0.8754*	-0.8183*	-0.0424	-0.7511*	-0.0304	-0.9304	0.5149	-1.3086*	0.3751	-0.3650	0.1188
	(0.7308)	(0.4917)	(0.4403)	(0.1374)	(0.4320)	(0.1482)	(0.6883)	(0.3807)	(0.7716)	(0.3660)	(0.7503)	(0.5544)
Observations	1,360	1,795	2,308	2,436	2,306	2,435	1,599	2,168	1,219	2,085	1,339	1,654
F-test	20.43	32.21	27.23	28.37	28.26	28.35	24.97	23.77	28.37	23.59	20.43	33.04
Panel B: Unincorporated Self-Employment												
	Female		Male		Black		Asian		White			
	Renter	Owner	Renter	Owner	Renter	Owner	Renter	Owner	Renter	Owner		
log(HP/INC)	-0.3875	0.0672	-0.8162***	0.0217	-0.5266	0.5862	-1.7478**	0.3518	-0.5674**	0.0532		
	(0.3285)	(0.1297)	(0.2901)	(0.1386)	(0.4228)	(0.3663)	(0.7669)	(0.4779)	(0.2251)	(0.1074)		
Observations	2,403	2,436	2,414	2,436	1,794	1,713	1,281	1,817	2,422	2,436		
F-test	31.11	28.37	29.08	28.37	31.90	23.88	25.16	29.62	28.08	28.37		
	Hispanic		Non-Hispanic		US Born		Non-US Born		US Citizen		Non-US Citizen	
	Renter	Owner	Renter	Owner	Renter	Owner	Renter	Owner	Renter	Owner	Renter	Owner
log(HP/INC)	-0.5900	1.5376***	-0.4593*	0.0480	-0.5769**	0.1033	-0.6389	0.5294**	-0.9349	-0.1278	-0.3412	1.7209***
	(0.4857)	(0.4517)	(0.2424)	(0.1055)	(0.2383)	(0.1056)	(0.4962)	(0.2624)	(0.6636)	(0.3625)	(0.5072)	(0.4331)
Observations	1,951	2,051	2,425	2,436	2,427	2,436	2,029	2,259	1,592	2,145	1,863	1,984
F-test	30.20	25.52	28.68	28.37	28.63	28.37	32.31	36.33	23.61	36.05	30.71	37

Notes: Robust standard errors clustered at the MSA level. All regressions include MSA and year fixed effects, Bartik demand controls, and MSA population growth. The dependent variable is the log share of self-employment (incorporated or unincorporated) by age–tenure cell. Each column reports IV estimates using the Saiz (2010) housing-supply-elasticity instrument; affordability is proxied by log(HP/INC). "Renter" and "Owner" indicate tenure within each demographic subgroup. Sample: ACS 2005–2019 (including 2008–2011). Reported first-stage F-statistics indicate strong instrument relevance across columns. Negative coefficients imply that higher price-to-income ratios (lower affordability) reduce self-employment; positive coefficients imply the opposite. Significance: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Taken together, these results reveal that the adverse effect of housing affordability on entrepreneurship is not uniformly distributed across the renter population. Affordability shocks disproportionately suppress entry among financially fragile and socially disadvantaged groups, highlighting how rising housing costs can reinforce pre-existing inequality and constrain upward mobility through entrepreneurship. This heterogeneity strengthens the interpretation of our main result as operating through liquidity mechanisms rather than through unobserved local demand or taste shifts.

Table 7.1 shows substantial heterogeneity in the response of self-employment to local housing affordability across demographic groups and tenure. Across nearly all demographic splits, coefficients

on log(HP/INC) are negative for renters and often positive for owners, consistent with the liquidity–collateral mechanism from the baseline: affordability shocks tighten cash-flow and borrowing constraints for renters while potentially relaxing collateral constraints for owners. Not every coefficient is statistically significant, but the broad sign pattern is remarkably consistent across subgroups.

Among renters, the negative effects of local housing affordability shocks are both broad and economically meaningful, though they differ between incorporated and unincorporated forms of self-employment. In the incorporated sample, significant declines are concentrated among *Female*, *White*, *Non-Hispanic*, *U.S.-born*, and *U.S.-citizen* renters, with coefficients ranging from approximately -0.8 to -1.1. These groups represent a large share of renters engaged in formal, growth-oriented entrepreneurship. The results indicate that when local housing costs rise, even relatively advantaged renters experience a tightening of liquidity and borrowing constraints that discourages entry into higher-barrier, formal-sector businesses. In the unincorporated sample, negative responses are even stronger and more pervasive—particularly among *Male*, *Asian*, *White*, *Non-Hispanic*, and *U.S.-born* renters—suggesting that affordability shocks especially suppress low-capital, necessity-driven entrepreneurship. Because unincorporated activities typically rely on personal savings or informal credit, rising rent burdens can directly crowd out such entry by draining available liquidity. In this sense, higher housing costs act as a cash-flow tax on entrepreneurial experimentation, discouraging self-employment precisely among those for whom entrepreneurship provides a pathway out of wage stagnation and limited upward mobility.

Among homeowners, the pattern largely reverses, consistent with the model's collateral mechanism. In the incorporated regressions, most coefficients are small and statistically insignificant, except for a positive and significant estimate for *Hispanic owners*, indicating that home price appreciation may ease credit access for some groups and foster formal business formation. In the unincorporated sample, several owner groups—especially *Hispanic*, *Non–U.S.-born*, and *Non–U.S.-citizen* homeowners—show significant positive coefficients, consistent with the notion that rising housing wealth can be leveraged as collateral or perceived financial security for small-scale ventures. These groups typically have lower average wealth levels, so the positive coefficients imply that collateral effects can partially offset liquidity disadvantages when home equity rises. These patterns highlight the asymmetric impact of housing costs across tenure types: renters face a liquidity squeeze that reduces entrepreneurship, while homeowners benefit from wealth effects that can expand borrowing capacity. Importantly, the variation across demographic subgroups suggests that ownership alone is not sufficient to insulate households from

affordability shocks; rather, the depth of accumulated wealth and access to financial networks determine who can translate housing gains into entrepreneurial opportunities. Overall, the results align with the model's central mechanism: housing affordability shocks reallocate entrepreneurial opportunities from liquidity-constrained renters toward capital-rich owners.

The demographic heterogeneity in Table 7.1 thus reveals that the impact of housing affordability shocks on entrepreneurship is highly uneven within the renter population and across tenure groups. The consistent negative renter responses and mixed positive owner responses closely match the model's liquidity-based mechanism: affordability shocks crowd out low-wealth, high-liquidity-constrained entrepreneurship while modestly stimulating activity where collateral values rise. The persistence of these sign patterns across gender, race, nativity, and citizenship categories indicates that they are not driven by unobserved local demand shifts or industry composition differences, but rather by the differential financial capacity of households to absorb housing cost shocks. In this sense, rising housing costs act as a financial stress test that amplifies pre-existing inequalities in access to entrepreneurial opportunity.

Building on these findings, we next ask whether the renter-side responses are concentrated in particular sectors of the economy. If liquidity constraints bind most strongly for low-capital, locally oriented businesses, then affordability shocks should disproportionately suppress entrepreneurship in non-tradable or asset-light industries. The next subsection tests this prediction by examining heterogeneity across sectors with different capital intensities and exposure to local cost pressures.

7.2 Industry Heterogeneity among Renters We next examine whether the renter-side responses vary systematically across industries that differ in their exposure to local cost pressures and capital requirements. This exercise helps reveal *where* within the local economy the burden of housing affordability primarily falls. In principle, industries producing non-tradable goods and services—such as retail, personal care, restaurants, or local construction—are more directly tied to local living costs and wages. Hence, when housing costs surge, these sectors are likely to experience a sharper contraction in entrepreneurial entry as both potential entrepreneurs and local consumers face liquidity constraints. By contrast, tradable industries compete in broader markets and are less sensitive to local cost-of-living shocks. Similarly, asset-heavy sectors (e.g., manufacturing, logistics) typically require higher fixed capital investment and greater access to external financing, while asset-light sectors (e.g., personal services, consulting, small retail) rely more heavily on personal savings and local cash flow. Disentangling these

margins allows us to assess whether affordability shocks disproportionately suppress entry among low-capital, liquidity-constrained businesses.

To operationalize this idea, we stratify renter self-employment by two standard industry classifications used in the entrepreneurship and urban economics literature. First, we distinguish between *tradable* and *non-tradable* sectors following Moretti (2012) and Autor, Dorn, and Hanson (2013). Second, we classify industries as *asset-heavy* versus *asset-light* following Hurst and Pugsley (2011) and Buera, Kaboski, and Shin (2011). These splits help isolate whether the mechanism operates primarily through local demand exposure or through liquidity and financing constraints related to capital intensity.

Table 7.2: Industry Heterogeneity in the Effects of Housing Affordability on Entrepreneurship

Panel A: Incorporated Self-Employment								
	Tradable		Non-Tradable		Asset-Heavy		Asset-Light	
	Renter	Owner	Renter	Owner	Renter	Owner	Renter	Owner
log(HP/INC)	-1.0057*	-0.1528	-0.8334**	-0.0700	-0.3530	0.0803	-0.9546**	-0.0241
	(0.5388)	(0.2616)	(0.4221)	(0.1549)	(0.4816)	(0.2464)	(0.4358)	(0.1614)
Observations	1,817	2,411	2,283	2,436	2,000	2,424	2,218	2,434
F-test	32.68	30.16	26.38	28.37	27.37	27.32	27.57	28.36
Panel B: Unincorporated Self-Employment								
	Tradable		Non-Tradable		Asset-Heavy		Asset-Light	
	Renter	Owner	Renter	Owner	Renter	Owner	Renter	Owner
log(HP/INC)	-0.4917	0.4794**	-0.7806***	-0.0369	-0.6900**	-0.0154	-0.4905*	0.0592
	(0.4531)	(0.2360)	(0.2095)	(0.1098)	(0.3363)	(0.2603)	(0.2534)	(0.1297)
Observations	2,195	2,415	2,425	2,436	2,356	2,431	2,418	2,436
F-test	34.53	29.76	28.11	28.37	28.81	28.21	27.36	28.37

Notes: Robust standard errors clustered at the MSA level. All regressions include MSA and year fixed effects, Bartik demand controls, and MSA population growth. The dependent variable is the log share of self-employment (incorporated or unincorporated) by age–tenure–industry cell. Each column reports IV estimates using the Saiz (2010) housing-supply-elasticity instrument, with affordability measured by log(HP/INC). "Renter" and "Owner" indicate tenure within each industry classification. Industries are divided into tradable versus non-tradable (Moretti, 2012; Autor, Dorn, and Hanson, 2013) and asset-heavy versus asset-light (Hurst and Pugsley, 2011; Buera, Kaboski, and Shin, 2011). First-stage F statistics indicate strong instrument relevance across all subsamples. Negative coefficients imply that lower affordability (higher housing price-to-income ratios) reduces self-employment. Significance levels: $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

The estimates confirm that the negative effect of rising housing costs is concentrated in non-tradable and asset-light sectors. These are industries where entry costs are relatively low but profits are sensitive

to local cost-of-living pressures, and where many young or liquidity-constrained entrepreneurs operate. In contrast, tradable or asset-heavy activities—typically involving larger, more capitalized firms—show much weaker responses. This pattern is consistent with the interpretation that housing affordability shocks reduce entrepreneurship not through sectoral demand changes but through liquidity constraints that bind most strongly for low-capital, local-market entrants.

Overall, the demographic and industry splits together demonstrate that the impact of housing affordability on entrepreneurship operates through both *who* the entrepreneur is and *what type of activity* they pursue. The evidence points to a liquidity-driven mechanism that amplifies inequality by discouraging entrepreneurial entry precisely where it serves as a key ladder for economic mobility.

Table 7.2 presents the industry-level heterogeneity in the effects of housing affordability on entrepreneurship among renters and homeowners. For renters, the negative impact of higher housing price-to-income ratios is concentrated in *non-tradable* and *asset-light* sectors. In the incorporated sample, coefficients of approximately -0.8 to -1.0 indicate large and statistically significant declines in formal entrepreneurship, while in the unincorporated sample, effects remain strongly negative and highly significant—particularly in non-tradable industries (-0.78^{***}) and asset-heavy sectors (-0.69^{**}). This pattern suggests that both low- and moderate-capital activities are sensitive to liquidity shocks, but the mechanism is most acute in industries dependent on local demand and personal savings. Rising housing costs thus suppress small-scale business formation in the very sectors where entry barriers are lowest and where entrepreneurship often serves as a safety net for liquidity-constrained workers.

Among homeowners, the estimated coefficients are smaller and often positive. In particular, owners in tradable or asset-light industries exhibit mild positive responses, implying that wealth or collateral effects partially offset liquidity pressures. These results reinforce the asymmetric nature of affordability shocks: they primarily constrain renters' entrepreneurial activity while leaving better-capitalized owners largely unaffected.

Taken together, the industry-level results reinforce the liquidity-based interpretation developed earlier. Rising housing costs disproportionately deter entry in precisely those sectors where entrepreneurship serves as a pathway for local economic mobility. Rather than reflecting cyclical demand shifts, these findings indicate that affordability shocks structurally reallocate entrepreneurial activity away from low-capital, locally oriented businesses—potentially diminishing the diversity and inclusiveness of urban entrepreneurship ecosystems.

8 Conclusion

The sharp rise in housing costs over the past two decades has raised concerns about whether declining affordability distorts local economic opportunity. This paper examines how metro-area housing affordability, measured by the ratio of local home prices to income, shapes who becomes an entrepreneur in the United States. The motivation stems from a simple observation: while homeownership provides collateral and access to credit, renting exposes households to rising costs of living and tighter liquidity constraints. These asymmetries suggest that housing affordability shocks may have distributional consequences not only for consumption and savings, but also for entrepreneurship—the primary engine of local job creation and economic mobility.

Our research question asks: when local housing costs increase, do they crowd out entrepreneurship among young renters? To address this question, we build a simple two-period model of household occupational choice. In the model, potential entrepreneurs face borrowing constraints tied to their housing tenure. A rise in local housing prices relaxes collateral constraints for homeowners but tightens liquidity constraints for renters, reducing their capacity to pay rents and cover start-up costs. This framework generates two key predictions: (1) affordability shocks should reduce entrepreneurial entry among renters through a *liquidity or rent-burden channel*; and (2) they should raise incorporated self-employment among owners through a *collateral channel*.

We test these predictions using microdata from the American Community Survey (ACS) for 2005–2019, combined with MSA-level housing price indices from Zillow and local income measures from the BEA. Housing affordability is measured as $\log(\text{HP}/\text{INC})_{mt}$, and endogeneity concerns are addressed using an instrumental variable strategy following Saiz (2010), where we interact local housing-supply elasticity with national housing market cycles to isolate plausibly exogenous variation in affordability. All regressions include MSA and year fixed effects, as well as Bartik demand controls, population growth, and local credit controls from the CRA.

The empirical results strongly align with the model's predictions. Rising housing costs reduce self-employment among renters—especially the young and those in unincorporated forms—while effects on incorporated renter businesses are smaller and often imprecise. Among homeowners, in contrast, affordability shocks are associated with higher rates of incorporated self-employment, consistent with relaxed borrowing constraints through rising collateral values. Older groups exhibit muted or statisti-

cally mixed effects, reflecting their greater wealth buffers and selection into less liquidity-constrained activities. Taken together, these findings highlight how housing affordability shapes not only the level but also the *composition* of entrepreneurship across demographic and tenure groups.

A series of robustness exercises reinforces the main interpretation. Results remain stable when excluding the Global Financial Crisis (2008–2011) and when replacing the Saiz elasticity with the Guren, Mckay, Nakamura, and Steinsson (2021) housing sensitivity index as the source of exogenous variation. Across these checks, the first-stage strength remains high and the sign pattern—negative for renters, positive for owners—persists, underscoring that the relationship is structural rather than episodic.

Finally, the within-renter heterogeneity analysis shows that the adverse effects of declining affordability are not evenly distributed. Responses are strongest among demographic groups and industries where liquidity constraints are most binding—such as non-citizens, renters in non-tradable and asset-light sectors, and younger households with limited wealth buffers. These patterns confirm that affordability shocks operate primarily through liquidity and cash-flow constraints, rather than through compositional or demand shifts. In this sense, rising housing costs act as a financial stress test that selectively crowds out entrepreneurship among those for whom it represents the primary ladder for upward mobility.

In summary, this paper shows that local housing affordability has powerful distributional effects on entrepreneurship. By tightening liquidity for renters and expanding collateral for owners, rising housing costs reshape who can take entrepreneurial risks in the modern urban economy. The results highlight that housing affordability is not only a matter of consumption or welfare, but also a determinant of local dynamism and opportunity. Policies that reduce excessive housing cost burdens—especially for younger and lower-wealth renters—may thus yield broad-based benefits for entrepreneurship, innovation, and long-term economic vitality.

The results suggest that housing policy is also entrepreneurship policy. Because rising housing costs disproportionately crowd out young renters' entry into self-employment, especially in liquidity-intensive, non-tradable sectors, policies that expand housing supply or lower entry-level rental burdens may indirectly stimulate local business creation. Local governments could promote entrepreneurship by integrating zoning reform, rental assistance, or targeted credit programs for non-homeowning entrepreneurs. In particular, portable housing vouchers or low-interest micro-loans tied to business formation could offset liquidity constraints generated by high rents.

Conversely, for homeowners, the collateral effects of house-price appreciation raise concerns about an uneven playing field: entrepreneurship may become increasingly wealth-based. Policies that broaden access to collateralizable assets or alternative financing (e.g., community-based lending or public credit guarantees) could help level this imbalance.

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A Additional Figures

A.1 Renter Self-Employment by Age Group Figure A.1 illustrates the share of renters among all self-employed individuals, separately for young and old workers. Young self-employed workers are much more likely to rent their homes—nearly 40 percent compared to roughly 20 percent among older entrepreneurs. This pattern highlights the importance of housing tenure for understanding entrepreneurship: younger cohorts, who are typically liquidity constrained and less likely to own homes, constitute a significant share of the self-employed population. Rising housing costs are therefore likely to affect them disproportionately.

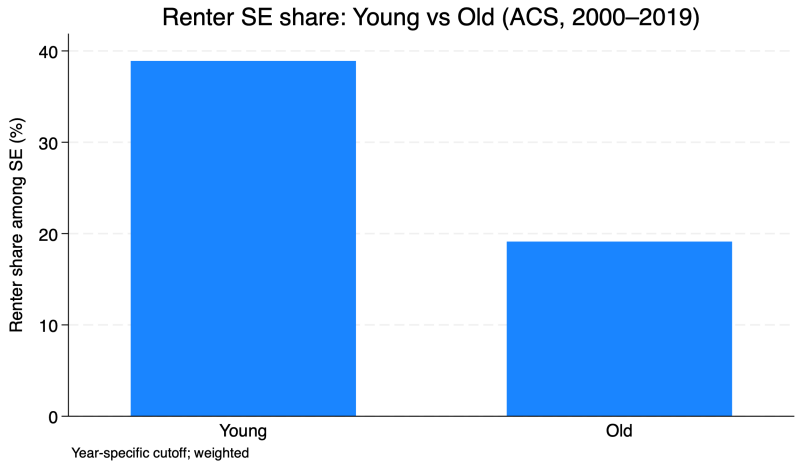


Figure A.1: Renter share among all self-employed (young vs. old)

Sample: ACS microdata (2000–2019); ages 20–60; person-weights applied.

A.2 Time Trends in Renter Entrepreneurship by Age Figure A.2 plots the time series of renter self-employment shares for young and old workers. The gap between the two groups persists throughout the period and even widens slightly after 2010, when housing affordability deteriorated. While both groups experience modest declines, the fall is notably steeper among young renters, suggesting that affordability pressures tighten liquidity constraints and crowd out entrepreneurial entry among younger cohorts. These descriptive patterns motivate the paper's focus on age–tenure heterogeneity in the main analysis.

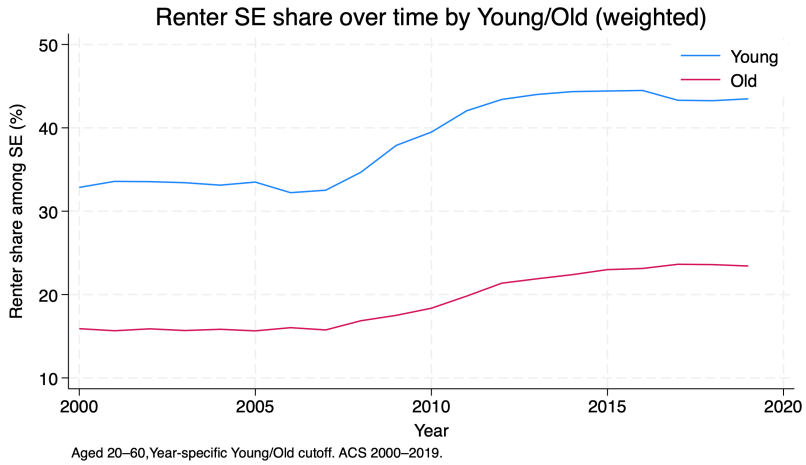


Figure A.2: Time series of renter self-employment share by age group

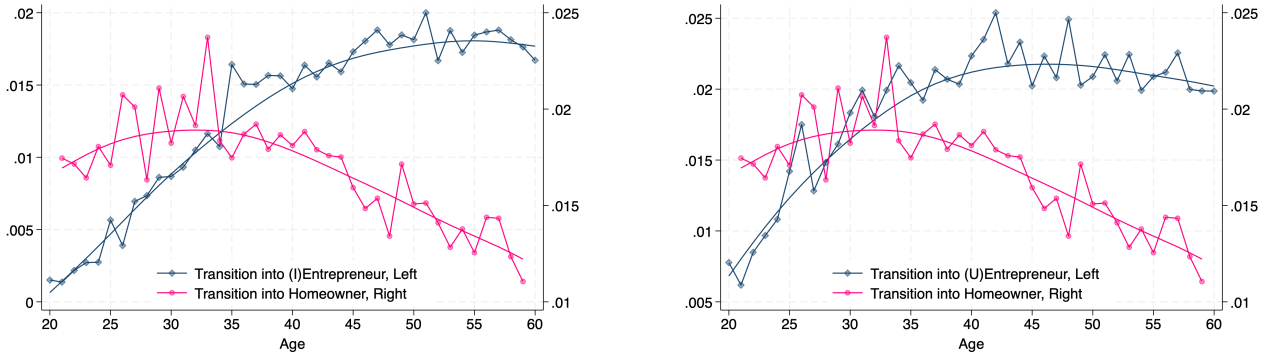
Sample: ACS microdata (2000–2019); ages 20–60; person-weights applied.

A.3 Age Profiles of Entrepreneurship and Homeownership

Figure A.3 complements the discussion in Section 1 by illustrating how the life-cycle timing of homeownership and entrepreneurship diverges. Using CPS-ASEC microdata from 2000–2019, we plot age-specific transition rates into self-employment and homeownership for individuals aged 20–60.

Panel (a) shows that incorporated entrepreneurship peaks in the late 30s to early 40s, well after the typical age of first home purchase. Panel (b) shows a similar, though flatter, pattern for unincorporated entrepreneurship. In both cases, the probability of becoming self-employed lags behind the probability of becoming a homeowner.

This sequencing has important implications for how housing affordability shocks affect different age groups. Because young adults tend to rent and have limited accumulated wealth, they are more exposed to liquidity constraints when housing costs rise. Older individuals, who are more likely to own homes, can instead benefit from collateral gains. These age profiles help rationalize why the paper finds stronger negative effects of affordability on young renters' entrepreneurship.



(a) Incorporated entrepreneurship vs. homeownership

(b) Unincorporated entrepreneurship vs. homeownership

Figure A.3: Age profiles of transitions: entrepreneurship versus homeownership

Sample: CPS-ASEC microdata (2000–2019); ages 20–60; person-weights applied.

A.4 Why Use a Yearly-Average Age Cutoff Figure ?? provides a methodological justification for defining "young" and "old" groups based on the yearly-average age rather than a fixed cutoff (e.g., age 40). The share of individuals above or below a fixed age threshold mechanically changes over time as the population ages, even if the underlying life-cycle behavior of entrepreneurship remains constant. This artifact can generate spurious time trends in group-specific entrepreneurship rates.

By contrast, using a yearly-average cutoff adjusts for gradual demographic shifts and captures each individual's relative position in the life cycle more accurately. This approach ensures that "young" and "old" groups remain comparable across survey years, isolating genuine behavioral differences rather than demographic composition effects.

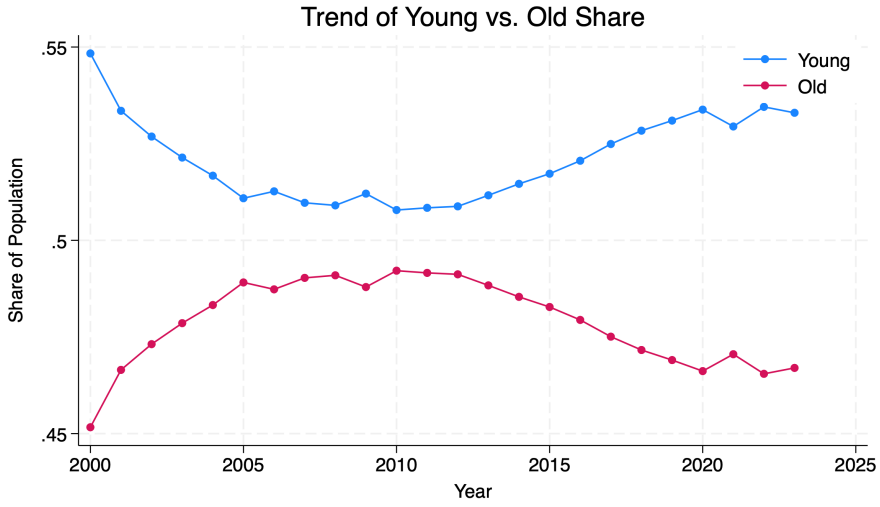


Figure A.4: Why Use Yearly-Average Age Instead of a Fixed Cutoff

Notes: A fixed cutoff at age 40 introduces mechanical demographic trends over time as the age distribution shifts. Defining "young" and "old" based on the yearly average age avoids these artificial trends by capturing individuals' relative position in the life cycle rather than an arbitrary threshold. Source: ACS microdata (2000–2019), ages 20–60; person-weights applied.

A.5 Commercial Property Price Index (Green Street) To contextualize the dynamics of housing markets, we compare the commercial property price index (CPPI) from Green Street with the residential Zillow Home Value Index (ZHVI). Both indices exhibit similar cyclical movements over the 2000–2019 period, capturing the mid-2000s boom, the sharp decline during the 2008–09 financial crisis, and the recovery throughout the 2010s.

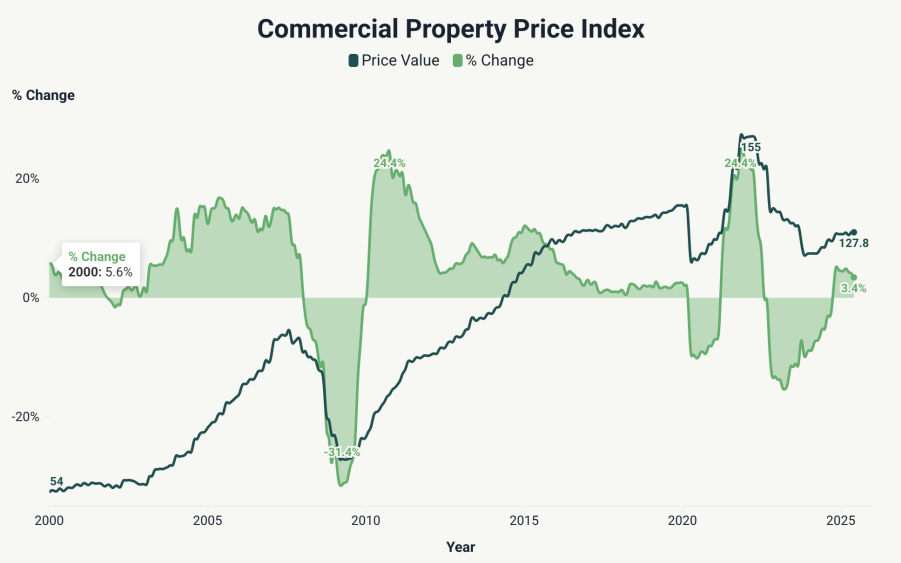


Figure A.5: Commercial Property Price Index (Green Street)

Notes: Source: Green Street Advisors, *Commercial Property Price Index* (accessed September 2025). The all-property CPPI weights are: retail (20%), apartment (15%), health care (15%), industrial (12.5%), office (12.5%), lodging (7.5%), data center (5%), net lease (5%), self-storage (5%), and manufactured home park (2.5%). Retail is split evenly between mall (50%) and strip retail (50%). The CPPI broadly comoves with the Zillow Home Value Index (ZHVI), highlighting similar cyclical patterns in residential and commercial real estate valuations.

A.6 Differences in MSA Rankings: HP vs. HP/INC Figure A.6 compares MSA-level rankings based on housing prices alone (HP) versus the housing price-to-income ratio (HP/INC). While both measures are correlated, the histogram of rank differences reveals that a substantial number of metropolitan areas shift position once local income levels are accounted for. This demonstrates that affordability (HP/INC) captures a different dimension of housing market variation than price levels alone. For instance, high-cost but high-income regions (e.g., San Francisco, Washington D.C.) may appear less extreme once income adjustments are made, whereas lower-income metros with moderate prices may rank as less affordable.

The figure underscores why HP/INC serves as a more conceptually appropriate measure of housing affordability for studying entrepreneurship. Affordability reflects not just nominal housing costs but also local purchasing power—an essential determinant of liquidity constraints for renters and small business formation.

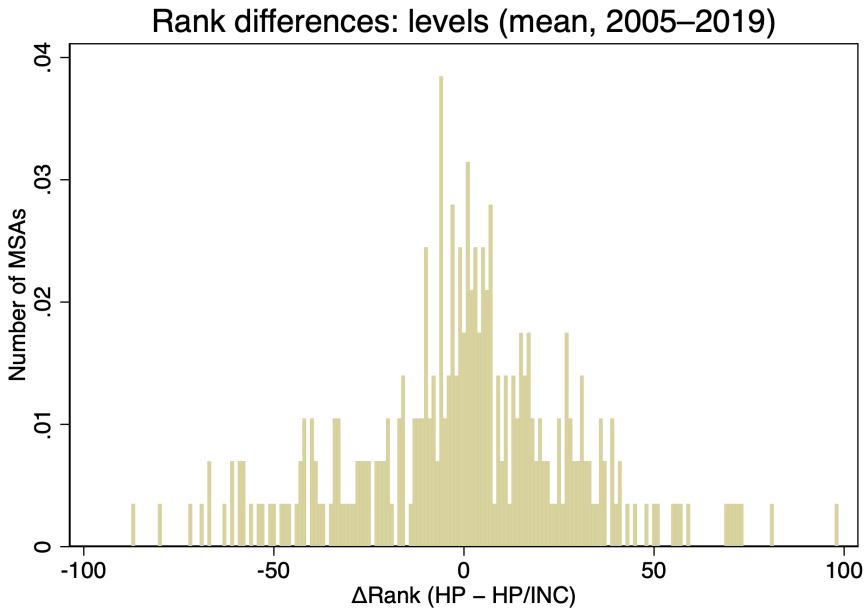


Figure A.6: Rank differences between HP/INC and HP (MSA-level rankings, 2005–2019)

Notes: Histogram of absolute rank differences between rankings based on HP only and HP/INC at the MSA level. ACS identifies MSAs from 2005 onward; the analytic sample covers roughly 260–265 MSAs over 2005–2019.

A.7 IV Diagnostics: Saiz Elasticity vs. Sensitivity This appendix presents a visual comparison between the two housing-market instruments used in our empirical analysis: the Saiz (2010) housing supply elasticity and the Guren et al. (2021) housing demand sensitivity index. Both measures exhibit strong first-stage relevance but capture distinct mechanisms—structural supply constraints versus historical price responsiveness—making them complementary rather than substitutable.

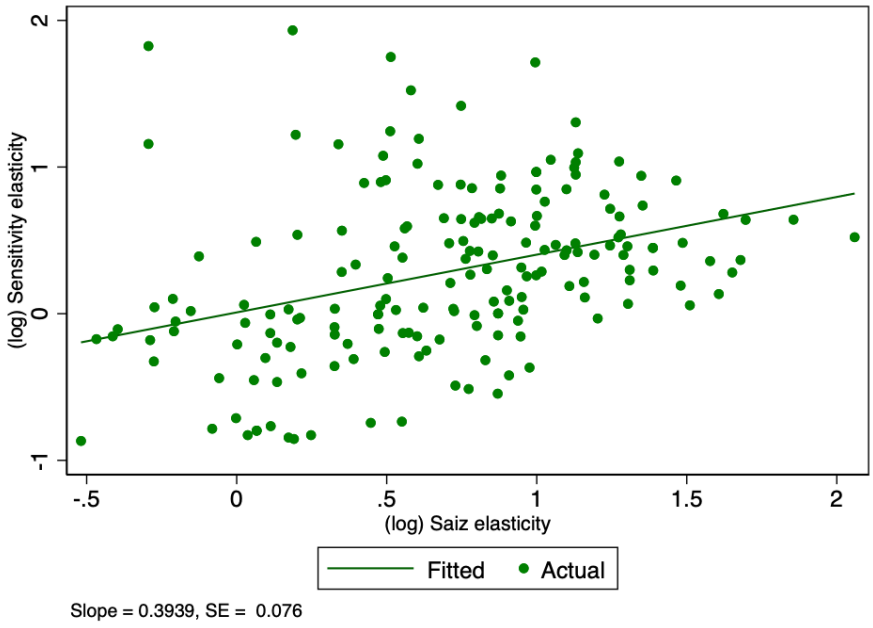
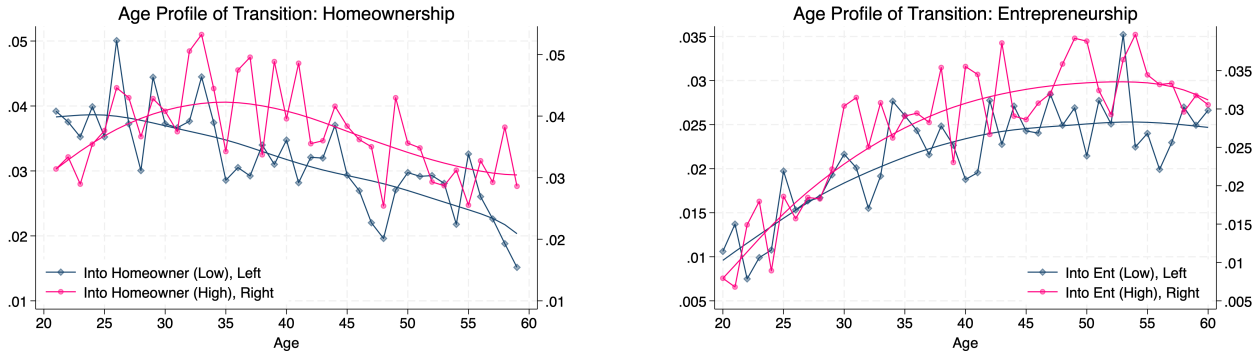


Figure A.7: Comparison of Saiz Elasticity and Guren et al. Sensitivity Index

Notes: Each point represents a metropolitan area in our estimation sample (2005–2019). Both variables are expressed in logs. The positive association supports the first-stage relevance of both instruments, though the two indices capture distinct underlying mechanisms: the Saiz elasticity reflects geographic and regulatory supply constraints, while the Guren et al. sensitivity index measures the historical reactivity of local prices to national housing demand shocks.

A.8 CPS-Based Descriptive Figures by Housing Affordability

This appendix presents supplementary descriptive evidence based on the CPS, comparing entrepreneurship and housing outcomes between states with high versus low housing price-to-income ratios (HP/INC). We compute each state's average HP/INC over 2000–2019 and divide states into quintiles. Figures A.8–A.11 compare outcomes in the lowest (Q1) and highest (Q5) HP/INC states.

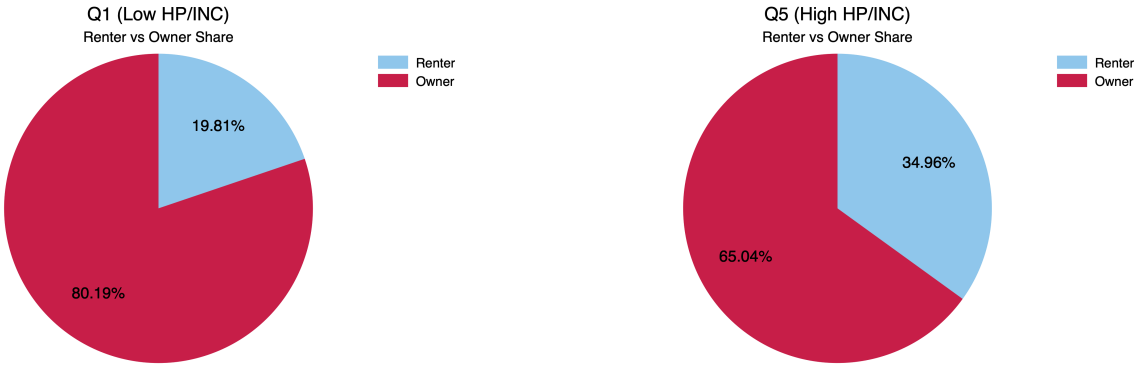


(a) Entrepreneurship rate by age

(b) Homeownership rate by age

Figure A.8: Age profiles of entrepreneurship and homeownership: high vs. low HP/INC states

Notes: CPS microdata, 2000–2019; ages 20–60; person-weights applied. States are grouped into quintiles based on average HP/INC over 2000–2019. Panels compare Q1 (low affordability pressure) and Q5 (high affordability pressure) states.

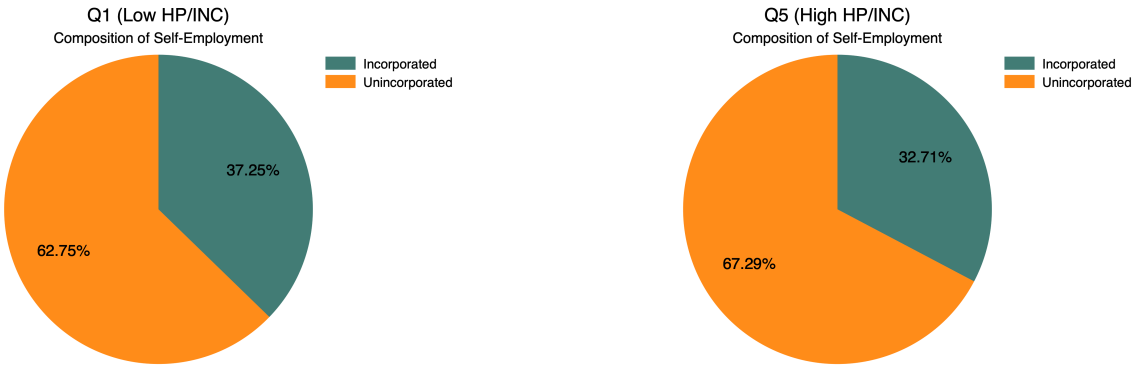


(a) Low HP/INC (Q1) states

(b) High HP/INC (Q5) states

Figure A.9: Tenure composition (renter vs. owner) by housing affordability

Notes: CPS microdata, 2000–2019; ages 20–60. Each panel shows the share of renters and owners in states belonging to the bottom (Q1) or top (Q5) quintile of average HP/INC.



(a) Low HP/INC (Q1) states

(b) High HP/INC (Q5) states

Figure A.10: Composition of self-employment by incorporation status: high vs. low HP/INC states

Notes: CPS microdata, 2000–2019; ages 20–60. Each panel shows the share of incorporated vs. unincorporated self-employment for states in the lowest (Q1) and highest (Q5) quintiles of HP/INC.

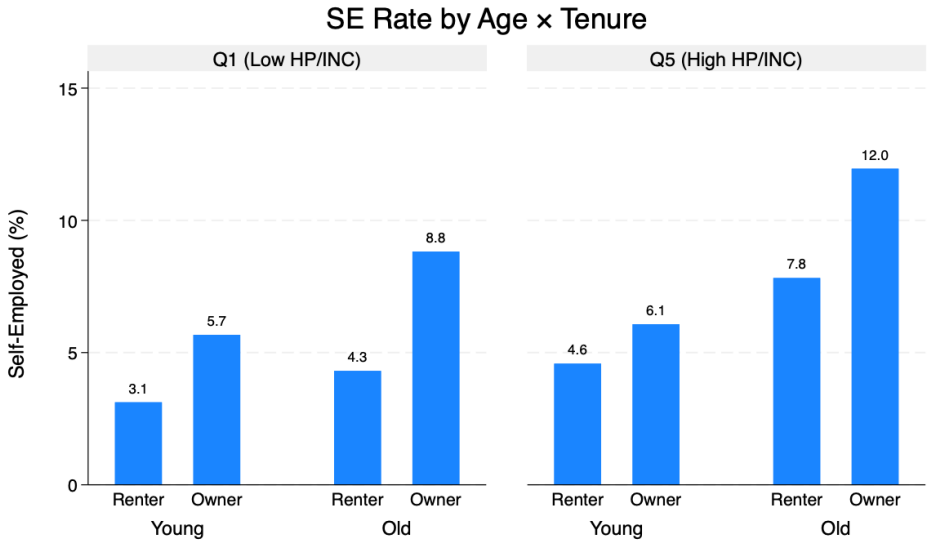


Figure A.11: Self-employment rates by age group and tenure: high vs. low HP/INC states

Notes: CPS microdata, 2000–2019; ages 20–60. Bars show self-employment rates (%) by age group (young vs. old) and tenure (renter vs. owner). Comparisons are made between Q1 (low HP/INC) and Q5 (high HP/INC) states, based on average HP/INC over the sample period.

B Additional Tables

Table B.1: Summary of Key Notation in the Model

Symbol	Description
C_t	Consumption in period $t \in \{0, 1\}$.
h_t	Housing services consumed in period t.
$\bar{h}$	Minimum housing requirement (subsistence level).
R	Rent (price per unit of housing services).
H	Owned housing stock (for homeowners).
$q \equiv R + \frac{R}{R_f}$	Two-period price–rent ratio (present value of rent flows).
R_f	Risk-free return on savings.
s	Savings (can be negative up to the borrowing limit).
B	Maximum borrowing limit faced by households.
η	Loan-to-value (LTV) ratio determining collateralizable share of housing.
y_t	Exogenous income in period t.
W_0	Initial financial wealth.
F	Fixed entry cost of entrepreneurship.
$e \in \{0, 1\}$	Entrepreneurship decision indicator (1 if entry occurs).
π	Random entrepreneurial profit, $\pi \sim N(\mu_\pi, \sigma_\pi^2)$.
μ_π, σ_π^2	Mean and variance of entrepreneurial return distribution.
β	Subjective discount factor.
γ	Coefficient of relative risk aversion (CRRA).
μ	Utility share of housing in the Cobb–Douglas utility aggregator.
κ^a	Age-specific risk tolerance (lower for older households).
$m_t = C_t + R(h_t - \bar{h})$	Composite expenditure (consumption plus rent).
$\phi(R) = [(1 - \mu)^{1-\mu}(\mu/R)^{\mu}]^{1-\gamma}$	Composite price index of consumption–housing bundle.
λ^B	Shadow price of the borrowing constraint (marginal utility of relaxing liquidity).
$\mu^*_{\pi,R}$	Renter's cutoff expected entrepreneurial return for entry.
$\mu^*_{\pi,O}$	Owner's cutoff expected entrepreneurial return for entry.

Notes: All variables are defined in real terms. The renter and owner cutoffs $\mu^*_{\pi,R}$ and $\mu^*_{\pi,O}$ summarize the liquidity and collateral channels, respectively: higher rent R raises $\mu^*_{\pi,R}$ but lowers $\mu^*_{\pi,O}$ through the LTV–collateral mechanism.

C Appendix: Incorporated vs. Unincorporated Self-Employment

This appendix provides additional discussion of the distinction between *incorporated* and *unincorporated* self-employment, as well as the rationale for using self-employment as a proxy for entrepreneurship.

Definitions and Conceptual Differences Incorporated self-employment (Inc. SE) refers to business owners who have legally registered their firms as separate entities (e.g., C-corporations, S-corporations, or LLCs). Unincorporated self-employment (Uninc. SE) includes sole proprietors or partners in informal businesses without legal registration. The two groups differ systematically along several dimensions:

- **Legal status:** Incorporated SE represents separate legal entities, whereas Unincorporated SE treats the individual and business as the same legal person.
- **Liability:** Incorporated SE has limited personal liability; Unincorporated SE implies unlimited personal liability.
- **Taxation:** Incorporated SE faces corporate tax rules, while Unincorporated SE income is taxed as personal income.
- **Scale:** Incorporated firms tend to be larger and more growth-oriented, while Unincorporated SE often captures necessity-driven or subsistence activity.

Empirical Comparison in the ACS Sample Table C.1 summarizes mean characteristics of incorporated and unincorporated self-employed individuals in the ACS sample (2000–2019, ages 20–60). Incorporated self-employed workers are, on average, older, more educated, more likely to be male, U.S.-born, homeowners, and concentrated in tradable and asset-heavy industries. In contrast, unincorporated self-employed individuals tend to be younger, more likely to rent, and disproportionately represented in non-tradable, low-capital sectors.

Table C.1: Comparison of Incorporated and Unincorporated Self-Employment in the ACS (2000–2019)

Variable	Inc. Mean	Uninc. Mean	Diff (Inc. - Uninc.)
log(HH income)	11.190	10.730	0.459
log(Individual income)	10.475	9.596	0.878
Young (share)	0.281	0.354	-0.073
Old (share)	0.719	0.646	0.073
Age (years)	45.133	43.434	1.699
College+	0.672	0.533	0.139
Male (share)	0.684	0.570	0.114
Homeowner (HH or Spouse)	0.734	0.538	0.196
Renter	0.191	0.336	-0.145
Migrant (a year ago)	0.155	0.191	-0.036
U.S.-born	0.761	0.727	0.034
U.S. citizen	0.632	0.437	0.195
Hispanic	0.119	0.206	-0.086
White	0.801	0.759	0.042
Black	0.062	0.082	-0.021
Asian	0.084	0.061	0.023
Tradable industry (share)	0.246	0.186	0.060
Asset-heavy industry (share)	0.333	0.307	0.026

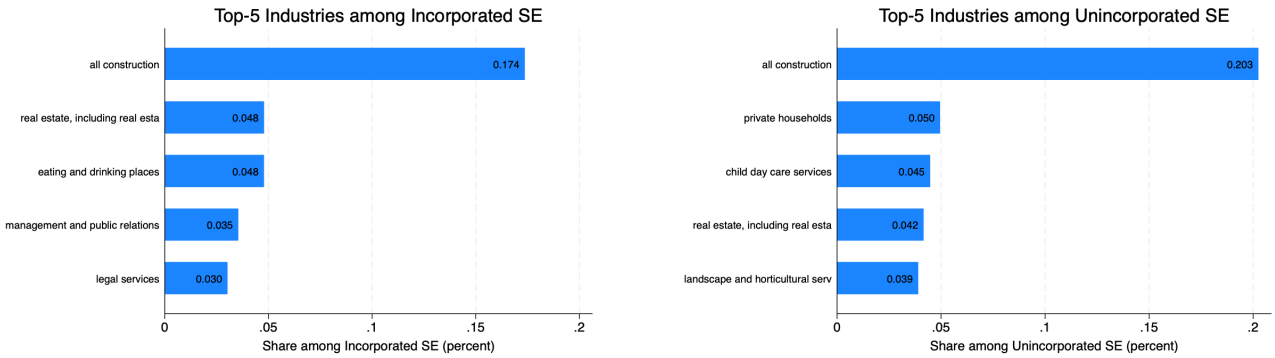
Overall SE share (%): 7.659 (Inc. 35.903% and Uninc. 64.097%).

Notes: ACS sample (2000–2019), ages 20–60. All reported differences between incorporated and unincorporated SE are statistically significant.

Overall, the self-employment share in the working-age population is 7.7%, of which approximately 36% are incorporated and 64% are unincorporated.

Industry Composition: Incorporated vs. Unincorporated Self-Employment To further illustrate these compositional differences, Figure C.1 displays the top five industries for incorporated and unincorporated self-employed workers. This visualization highlights how incorporation status maps into the nature of business activity and capital intensity.

Discussion: Using Self-employment as a Proxy for Entrepreneurship The use of self-employment as an empirical proxy for entrepreneurship has a long tradition in economics. Early foundational work by Evans and Leighton (1989) established self-employment as a measurable form



(a) Top 5 industries among incorporated self-employed

(b) Top 5 industries among unincorporated self-employed

Figure C.1: Industry composition of incorporated and unincorporated self-employment

Notes: ACS microdata, 2000–2019, individuals aged 20–60, person-weighted. Incorporated self-employment is concentrated in professional and capital-intensive sectors (e.g., legal services, management), which require higher startup costs and business networks. Unincorporated self-employment, in contrast, is concentrated in labor-intensive and low-capital sectors (e.g., personal services, childcare, private households) with lower entry barriers. The relative absence of young renters in incorporated sectors suggests that high housing costs disproportionately limit transitions into opportunity-driven entrepreneurship.

of entrepreneurial activity using the Current Population Survey (CPS), showing that transitions into self-employment capture individual decisions to start and operate small businesses. Building on this approach, Fairlie (2005) and Fairlie and Meyer (2000) used CPS and ACS microdata to examine the demographic and temporal patterns of self-employment participation, helping to solidify its role as a standard empirical measure of entrepreneurship in large-scale datasets.

Subsequent research has emphasized that self-employment encompasses a heterogeneous mix of business activities, ranging from innovative opportunity-driven ventures to subsistence or necessity-based work. Hurst and Pugsley (2011) showed that many small businesses are non-innovative and rarely grow, cautioning that self-employment statistics may overstate true entrepreneurship. Nevertheless, scholars such as Schoar (2010) and Levine and Rubinstein (2017) refined this interpretation by distinguishing between *subsistence* and *transformational* entrepreneurship. They demonstrated that **incorporated** self-employment more closely corresponds to growth-oriented, opportunity-driven entrepreneurship, while **unincorporated** self-employment often reflects liquidity constraints or risk aversion.

In the context of housing and local market shocks, self-employment has been widely adopted as a practical measure of entrepreneurial activity. Fairlie and Krashinsky (2012) found that household wealth shocks, such as housing appreciation, increase transitions into self-employment, highlighting the role of liquidity and collateral constraints. Similarly, Kerr and Nanda (2009) demonstrated that credit

market deregulation and improved access to finance facilitate new firm entry, using self-employment as the key entrepreneurial outcome.

More recent applied work continues to use self-employment as a central indicator of entrepreneurial activity in empirical settings. Studies such as Ryan Decker and Miranda (2014) employ self-employment and business-owner data to document declining entrepreneurship rates in the United States, while **?** interpret self-employment behavior under labor-market frictions. Together, these works justify the continued use of self-employment—especially its incorporated form—as a practical, consistent, and behaviorally meaningful proxy for entrepreneurship in empirical research.

D Appendix: Constructing CRA-Based Small Business Lending Shocks

D.1 Motivation and Conceptual Background A key confounding factor in assessing the effects of housing affordability on entrepreneurship is local credit supply. If bank-driven contractions in small-business lending simultaneously depress entrepreneurial entry and affect local incomes or housing prices, OLS or IV estimates of affordability effects could conflate housing and credit channels. To address this concern, we follow the approach of Davis and Haltiwanger (2024) and construct a time-varying measure of local credit supply using data from the Community Reinvestment Act (CRA).

The CRA requires large depository institutions (assets exceeding $1 billion) to report annual originations of small-business loans by geography and borrower revenue size. These data provide granular information on bank-level lending to firms with gross revenue below $1 million—an effective proxy for loans to small and young firms. Because these data cover nearly all major U.S. metropolitan areas since the mid-1990s, they allow us to track variation in credit supply conditions across MSAs and over time. Our goal is to extract an MSA-level index of small-business lending (SBL) that reflects exogenous fluctuations in banks' national balance sheet conditions, rather than local loan demand.

D.2 Construction of the SBL Measure We adapt the two-step Bartik-style procedure developed in Davis and Haltiwanger (2024) to isolate credit-supply shocks that are plausibly orthogonal to local demand conditions.

Step 1: Estimating Bank-Level Lending Behavior. For each pair of consecutive years $(t-1, t)$, we estimate the real growth rate of small-business loan originations at the bank–MSA level:

$$g_{mjt} = \mu_{mt} + \upsilon_{jt} + \varepsilon_{mjt}, \tag{D.1}$$

where g_{mjt} denotes the log change in real lending by bank j in MSA m, μ_{mt} are MSA–year fixed effects that absorb local demand conditions, and υ_{jt} are bank–year fixed effects capturing national-level shifts in bank j's lending capacity (e.g., balance sheet strength or regulatory constraints). The regression is estimated by weighted least squares, where weights are the bank's lagged local loan share $\omega_{mjt-1} = L_{mjt-1} / \sum_{j'} L_{mj't-1}$. The estimated $\widehat{\upsilon}_{jt}$ series represents bank-specific national lending shocks purged of local factors.

Step 2: Aggregating Bank Shocks to the MSA Level. We then construct a Bartik-style exposure index that maps these national bank shocks back to local markets using their historical bank composition:

$$\text{SBL}_{mt} = \sum_{j} \omega_{mjt-1}\, \widehat{\upsilon}_{jt}. \tag{D.2}$$

Intuitively, this measure captures how an MSA's bank footprint exposes it to nationwide bank lending contractions or expansions. Because both the bank shocks ($\widehat{\upsilon}_{jt}$) and exposure weights (ω_{mjt-1}) are predetermined, SBL_{mt} varies exogenously across MSAs and over time with national credit cycles, independent of contemporaneous local economic conditions.

Interpretation. Economically, a higher SBL_{mt} indicates more favorable local credit conditions for small and young firms. Since most small-business loans finance working capital or startup costs, this measure serves as a direct proxy for the availability of external finance relevant to entrepreneurship. Following Davis and Haltiwanger (2024), we interpret SBL_{mt} as a local credit-supply index that absorbs variation due to bank balance-sheet shocks rather than local demand.

D.3 Integration into the Baseline and IV Regressions We include SBL_{mt} as an exogenous control in both OLS and IV specifications at the MSA–year level:

$$Y_{mt} = \beta \log(\text{HP}/\text{INC})_{mt} + \chi \text{SBL}_{mt} + X'_{mt}\theta + \lambda_m + \lambda_t + \varepsilon_{mt}, \tag{D.3}$$

where Y_{mt} is the log share of self-employment for a given tenure–age group, X_{mt} includes additional controls (Bartik-type demand shocks, population growth, unemployment), and λ_m and λ_t denote MSA and year fixed effects. In the IV framework, $\log(\text{HP}/\text{INC})_{mt}$ is instrumented with the interaction of national affordability cycles and local Saiz (2010) elasticity polynomials.

By incorporating SBL_{mt}, we ensure that the estimated effect of housing affordability on entrepreneurship is not confounded by concurrent credit-supply fluctuations. Empirically, we find that SBL_{mt} enters positively and significantly in regressions for renter and young self-employment, consistent with its interpretation as a measure of credit availability. Importantly, the inclusion of SBL_{mt} does not alter the sign, magnitude, or significance of the main housing affordability coefficient β, reinforcing the robustness of our identification.

D.4 Discussion and Empirical Properties

The CRA-based SBL_{mt} measure exhibits strong time-series co-movement with national financial conditions and cross-sectional dispersion reflecting heterogeneity in MSA bank structures. It correlates with young-firm activity but not with lagged local output or population growth, supporting its interpretation as a credit-supply rather than a demand-driven variable. Robustness checks using alternative deflators (GDP vs. CPI-U) and weighting schemes yield nearly identical results.

Overall, this control strengthens our causal interpretation by removing a key confounding channel: variation in small-business credit availability that could otherwise bias the estimated impact of housing affordability on entrepreneurship.

E Appendix: Constructing the Housing Price Sensitivity Index

E.1 Motivation and Conceptual Background An alternative to the Saiz (2010) housing supply elasticity is the housing price sensitivity index proposed by Guren, Mckay, Nakamura, and Steinsson (2021). While the Saiz elasticity measures long-run supply constraints arising from geography and land-use regulation, the sensitivity index captures the reduced-form responsiveness of local housing prices to regional or division-level housing market cycles. The two measures are conceptually distinct but complementary: Saiz reflects the capacity of a market to expand supply in response to demand shocks, whereas sensitivity reflects the extent to which local prices historically comove with broader regional housing cycles, bundling the influence of demand, credit, and composition effects. Empirically, areas with tighter supply (low Saiz elasticity) often exhibit higher price sensitivity, but the relationship is not mechanical and allows the two indices to identify different dimensions of housing market adjustment.[25]

E.2 Definition and Estimation For each metropolitan area (CBSA) i, the housing price sensitivity γ_i is defined as the slope linking local house-price growth to the corresponding regional or division-level price growth:

$$\Delta \log P_{i,t} = \gamma_i \, \Delta \log P_{r(i),t} + X'_{i,t}\theta + \alpha_i + \lambda_{r(i),t} + u_{i,t}, \tag{E.1}$$

where $\Delta \log P_{i,t}$ is the quarterly growth rate of the local house price index, $\Delta \log P_{r(i),t}$ is the corresponding regional or division-level price growth, $X_{i,t}$ are additional controls, α_i are CBSA fixed effects, and $\lambda_{r(i),t}$ are region-by-time fixed effects that absorb level differences and common time shocks.

The estimation follows the procedure outlined by Guren, Mckay, Nakamura, and Steinsson (2021):

1. Estimate equation (E.1) on a long pre-sample panel of CBSA-level house price growth (typically quarterly), regressing local growth on corresponding regional growth to obtain $\widehat{\gamma}_i$.
2. Apply a *leave-out buffer* around the target period (e.g., ± 3 years) so that γ_i is estimated using only past information and no look-ahead bias.
3. Include CBSA fixed effects and region$\times$time fixed effects to absorb persistent level differences and common macro shocks.

The resulting $\widehat{\gamma}_i$ provides a time-invariant measure of how much local prices historically respond to

[25] See Davis and Haltiwanger (2024) for an analogous use of both the Saiz elasticity and the Guren et al. sensitivity measure as complementary instruments for housing shocks.

aggregate housing cycles, serving as an empirical summary of each market's housing demand sensitivity.

E.3 Instrument Construction Once $\widehat{\gamma}_i$ is estimated, it can be used to form a shift–share style instrument for local housing prices. Following Guren, Mckay, Nakamura, and Steinsson (2021) and Davis and Haltiwanger (2024), the sensitivity-based exposure is defined as:

$$Z_{i,t}^{\text{Sens}} = \widehat{\gamma}_i \times \Delta \log P_{r(i),t}, \tag{E.2}$$

where $\Delta \log P_{r(i),t}$ is the regional or division-level housing price growth. Intuitively, areas that have historically exhibited greater price sensitivity (high $\widehat{\gamma}_i$) react more strongly to the same regional housing demand shock, yielding larger predicted changes in local prices and thus stronger first-stage variation. Empirically, this instrument tends to deliver precise first stages and slightly smaller second-stage elasticities than the Saiz-based IV, providing a conservative benchmark relative to OLS.

For comparability, our implementation mirrors the baseline Saiz specification. We replace the polynomial in the Saiz elasticity with a polynomial in $\widehat{\gamma}_i$, interacting it with regional housing price growth:

$$\log(\text{HP/INC})_{mt} = p(\widehat{\gamma}_m) \times \Delta \log P_{r(m),t} + \psi \, \text{SBL}_{mt} + X'_{mt}\phi + \lambda_m + \lambda_t + \eta_{mt}, \tag{E.3}$$

where $p(\cdot)$ denotes a cubic polynomial, SBL_{mt} is the CRA-based small business lending control, and X_{mt} includes other local controls (Bartik demand shocks, population growth, unemployment). This specification ensures that any difference in the results arises solely from the alternative exposure parameterization.

E.4 Identification and Empirical Properties The identification assumption is analogous to that of the Saiz-based instrument. Conditional on MSA and year fixed effects and the included controls, historical responsiveness to regional cycles should not directly affect contemporary entrepreneurship outcomes, except through its influence on local housing affordability. The instrument is relevant because metropolitan areas with higher $\widehat{\gamma}_i$ experience stronger predicted price movements for the same regional housing shock. As documented in Guren, Mckay, Nakamura, and Steinsson (2021), the sensitivity-based IV produces high first-stage F-statistics, and its second-stage effects are typically close to those obtained with the Saiz-based IV, indicating that both identify similar underlying affordability shocks through distinct but complementary channels.

E.5 Relation to the Saiz (2010) Elasticity The conceptual link between the two instruments is illustrated in Figure A.7, which plots the cross-sectional relationship between the log Saiz elasticity and the log sensitivity index across MSAs. The fitted line shows a positive but imperfect correlation: markets with low Saiz elasticity (tight supply) tend to exhibit high price sensitivity, but the mapping is far from one-to-one. This pattern underscores that the two indices capture distinct structural forces—Saiz reflecting physical supply capacity, and sensitivity reflecting the historical reactivity of local prices to aggregate shocks. Their complementarity strengthens the interpretation that our identification strategy isolates variation driven by affordability rather than by region-specific demand conditions.