Housing Collateral and Entrepreneurship

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Abstract

This paper shows that collateral constraints restrict entrepreneurial activity. Our empirical strategy uses variations in local house prices as shocks to the value of collateral available to individuals owning a house and controls for local demand shocks by comparing entrepreneurial activity of homeowners and renters operating in the same region. We find that an increase in collateral value leads to a higher probability of becoming an entrepreneur. Conditional on entry, entrepreneurs with access to more valuable collateral create larger firms and more value added, and are more likely to survive, even in the long run.

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"Higher home prices can stoke the economy by providing owners with more valuable collateral to borrow against for other purchases; many entrepreneurs fund their business this way." *The Economist,* Oct 19, 2013.

1 Introduction

This paper provides evidence that entrepreneurs face credit constraints, which restrict firm creation, post-entry growth, and survival, even over the long run. The existing literature documents a strong correlation between entrepreneurial wealth and the propensity to start or keep a business (Evans and Jovanovic, 1989; Evans and Leighton, 1989; Holtz-Eakin et al., 1993). However, a considerable debate is waging about whether such a correlation constitutes evidence of financial constraints. For instance, individuals who experience a wealth shock, through personal accumulation or inheritance, may also experience an expansion of business opportunities for reasons unrelated to their wealth (Hurst and Lusardi, 2004). In this case, policies aimed at facilitating the financing of new businesses would not increase welfare. Worse yet, in the absence of financial constraints, positive shocks to entrepreneurial wealth may lead to excessive investment, provided that entrepreneurs derive private benefits from remaining in business (Andersen and Nielsen, 2011; Nanda, 2011). On the other hand, if financing frictions lead to underinvestment and fewer than optimal business starts, public intervention in favor of small firm financing may be welfare improving. For these reasons, the question of whether financing constraints significantly hinder firm creation and growth carries important policy implications.

To contribute to this debate, this paper uses variations in local house prices, combined with micro-level data on home ownership by entrepreneurs.[1] We employ a difference-in-differences approach. We compare entrepreneurial outcomes of entrepreneurs owning a house and entrepreneurs renting a house, and compare this difference across geographic regions with different house price dynamics. The comparison between owners and non-owners allows us to filter out local economic

[1] We refer to all owners of newly created businesses as "entrepreneurs."

shocks that may drive the creation, growth, and survival of local businesses. This approach is similar to Chaney et al. (2012), who document the effect of collateral values on the investment of publicly traded corporations in the United States.

We investigate both the extensive and intensive margin of entrepreneurship, that is, entry decisions as well as post-entry growth. Our investigation starts with firm growth and survival, conditional on entry. We construct a large cross section of French entrepreneurs starting a businesses in 1998. Combining survey data and administrative data, we are able to observe a variety of personal characteristics, in particular, the home location of the entrepreneurs, as well as their home-ownership status. We match this information to firm-level accounting data of the newly created firms for up to eight years following creation. We find that in regions with greater house price growth in the 1990s, firms started by homeowners in 1998 are significantly larger and more likely to survive than firms started by renters. In other words, the difference in the size of businesses created by owners and renters is larger in regions in which house prices have appreciated more in the past five years. This effect is robust to controlling for a large set of entrepreneurial characteristics. It is also persistent: in 2005, firms started by entrepreneurs with lower collateral values in 1998 remain significantly smaller in terms of assets, sales, employment, or value added. Finally, this effect is economically large: going from the 25th to the 75th percentile of house price growth in the five years preceding creation allows homeowners to create firms that are 6.5% larger in terms of total assets.

We then verify how collateral shocks affect the probability of starting a business, that is, the extensive margin of entrepreneurship. To this end, we use a different dataset, the French labor force survey, which is a rotating panel that tracks randomly selected individuals for three consecutive years. Importantly, these data contain information on home ownership, geographic location, and entrepreneurial activity. We find that homeowners located in regions where house prices appreciate more are significantly more likely to create businesses, relative to renters located in the same regions. In other words, the difference between owners and renters in the propensity to start a business is larger in regions in which house prices appreciated more in the past. Again,

the effects are economically sizable. Going from the 25th to the 75th percentile of past house price growth increases the probability of firm creation by homeowners, relative to renters, by 9% in our preferred specification. We confirm the importance of this result in the aggregate: total firm creation at the regional level is more correlated with house prices in regions where the fraction of homeowners is larger.

This paper contributes to the literature on financing constraints and entrepreneurship. The extant literature focuses on the link between entrepreneurial wealth and firm creation, growth, or survival. Robb and Robinson (2013) document that debt is a large source of financing for start-ups (approximately 44%) and that its availability is related to the scarcity —and therefore the value— of real estate collateral. Hurst and Lusardi (2004) and Adelino et al. (2013) are closest to our paper, because they also investigate the role of housing wealth on firm creation. However, our paper makes two significant advances relative to these papers: (1) the information on individual homeownership allows us to control for local economic shocks that might create a spurious correlation between entrepreneurial rate and local house prices, and (2) the nature of our data allows us to track not only firm creation (the extensive margin), but also post-entry growth and survival over a long horizon (the intensive margin).

Several earlier papers focus on the role of inheritance shocks to firm quality and survival. Holtz-Eakin et al. (1993) find that firms started after a large inheritance are more likely to survive, a finding they interpret as evidence of credit constraints. By contrast, using Danish data, Andersen and Nielsen (2011) find that businesses started following a large inheritance have lower performance. This finding suggests the relationship between wealth and entrepreneurship may be driven by private benefits of control, or in other words, that business ownership has a luxury-good component (Hurst and Lusardi, 2004). The relation between wealth shocks and post-entry growth/survival thus remains an open discussion. Our paper contributes to this debate by looking at wealth shocks generated by local variations in house prices for homeowners. Arguably, these shocks are much less likely to be correlated with the unobserved heterogeneity in entrepreneurial outcome than inheritance shocks. Fracassi et al. (2012) also provide a clean identification on the

role credit constraints play small business survival, by exploiting a discontinuity in the attribution of loans to start-ups at a small local bank. In a similar vein, Black and Strahan (2002) find that banking deregulations in U.S. states led to a large increase in firm creations. Whereas these papers focus on the effect credit supply on firm creation and survival, our paper focuses on credit demand via the supply of collateral.

Our paper also contributes to the literature on the link between economic activity and collateral values (Black et al., 1996; Bernanke and Gertler, 1986; Kiyotaki and Moore, 1995), particularly real estate collateral. Benmelech et al. (2005) and Benmelech and Bergman (2008) have shown how the value and redeployability of collateral affect financial contracts. Consequently, when house prices increase, firms and households have more valuable collateral to pledge, which raises borrowing capacity. On the credit-supply size, banks' balance sheets become stronger, which allows them to lend more. Recent papers have documented the link between house prices and household borrowing and consumption (Mian et al., 2011; Gan, 2010), the link between real estate prices and corporate investment (Gan, 2007a; Chaney et al., 2012), and the link between real estate bubbles and bank lending (Gan, 2007b). Our paper shows that entrepreneurial activity also strongly reacts to changes in the value of collateral available to potential entrepreneurs.

The paper has four remaining sections. Section 2 describes the data we use. Section 3 lays out the empirical strategy. We describe and comment on the results in section 4. Section 5 concludes.

2 Data

The paper uses three different sets of data. The first is a random sample of one sixth of all entrepreneurs starting a firm in France in 1998, with detailed information on both the entrepreneur herself and the firm she creates, every year until 2005 or firm exit. We use this sample to investigate the impact of housing wealth on post-entry growth and survival. We call this dataset the intensive-margin sample. The second dataset is a representative three-year rotating panel of French individuals, covering the 1990-2002 period, with detailed information on occupation

and personal characteristics, but no information on post-entry growth. We use this sample to investigate how shocks to housing wealth affect the propensity to start a business. We call this dataset the extensive margin sample. The third dataset directly uses aggregate (e.g., regional and exhaustive) data on firm creation, homeownership rate, and house price fluctuations. This last dataset allows us to confirm, using alternative data sources, that our microeconomic findings on firm creations are still present at a more aggregated level.

2.1 Intensive-Margin Sample

We construct this first dataset from the 1998 wave of the SINE survey (see Landier and Thesmar (2009) for a thorough description of this data source). The French statistical office (INSEE) runs this survey every four years, sending questionnaires to the selected firms. Due to its administrative nature, the survey response rate is high (85%). The survey contains detailed information on the entrepreneur (age, education, work experience, etc.) and her project (ambition, industry, scope, form of business, etc.). It selects a random sample of approximately one third of all firms started in France during the first semester. It consists of both "new" start-ups as well as existing firms taken over by new entrepreneurs. We focus only on the first category. Importantly for our purpose, the survey asks the entrepreneur whether she owns or rents her private home.[2]

To measure post-entry growth, we use accounting information from the tax files from the Finance Ministry. These files, available yearly from 1999 to 2005, cover all firms that are subject to either the regular corporate tax regime (Bénéfice Réel Normal) or to the simplified corporate tax regime (Régime Simplifié d'Imposition). Together, these data cover about 55% of newly created firms. The remaining 45% correspond to very small firms. Indeed, firms with annual sales below 32,600 Euros (81,500 Euros in retail and wholesale trade) can opt out and choose a simplified account reporting (Micro-Entreprise), in which case they do not appear in the tax files. The tax files contain detailed accounting information. For the purpose of this study, we retrieve information

[2]Other waves of this survey (1994, 2002, 2006) exist, but the 1998 wave is the only one that has information on homeownership. This data limitation forces us to focus on a single cross section of data for the post-entry growth analysis. Our analysis on the decision to start a business does not face such constraints.

on location, total assets, total sales, financial debt, number of employees, value added, and the wage bill. As in the SINE survey, each firm in the tax file is uniquely identified by its SIREN number, a feature we exploit to match the two datasets.

We construct a sample of yearly house price growth for 25 regions in France for the 1985-2005 period. To do this, we combine two sources of information. We start with a dataset available from the French Ministry of Housing, which provides the average transaction value of houses in a given region in a given year based on a representative sample of housing transactions and is collected from tax data. This dataset is available annually from 1985 onward for 21 regions in France. We then combine this sample with a repeat-sale house price index, which is available from the office of Parisian Notaries for the 1992-2005 period and covers 5 sub-regions within the larger region containing Paris. Combining these two samples allow us to compute the cumulative house price for each of these 25 regions from 1992 to 1997. This is our measure of housing capital gains for entrepreneurs who are homeowners. Figure 1 shows the evolution of house prices in our sample across these 25 regions from 1992 to 1997. Over the 1992 to 1997 period, the median region experienced a cumulative house price growth of about 2%. Importantly for our identification strategy, significant heterogeneity exists across régions, from a decline of about 3% at the 25^{th} percentile to an increase of about +8% at the 75^{th} percentile. Out of the 25 regions covered in the sample, nine experienced house price declines in that period. In particular, Paris and the surrounding regions experienced a severe decline of house prices by around 20% on average over this five year period.

The 1998 wave of the SINE survey conveys a total of 21,871 new start-ups. From this initial sample, we restrict our sample to firms for which we have accounting information in the 1999 tax files. The sample size drops to 11,745 observations. Then, we restrict ourselves to start-ups that have information on all the variables we include in our regression analysis: homeownership (our key explanatory variable) and other control variables. Precisely, we control for entrepreneurial characteristics (previous employment status (employed, unemployed, out of the labor force), age, education (no diploma, technical training, high school diploma, college diploma), gender, previous

job description (craftsman, executive, intermediary profession, employee, worker), existence of an entrepreneurial background and a serial entrepreneur dummy) and firm characteristics (business form, whether the business is operated from the entrepreneur's home and industry (36 industry classification)). We end up with a sample of 9,164 firms.

Table 1 presents summary statistics of the intensive-margin dataset. Panel A reports the distribution of house price growth from 1992 to 1997 across the 25 geographic regions. Panel B reports the firm characteristics we use as controls in our regression analysis for 1999, the first whole fiscal year after creation. The average firm has 131k euros in assets, 208k euros in sales, 102k euros of debt, and close to two employees. Average value added (revenue less outside purchases of materials and services) is 130k euros, of which 50k euros correspond to wage payments (total employee compensation). As expected, all these variables have positive skewness: in the median firm, the owner is the firm's only employee. Table 2 compares characteristics of owners and renters. The differences in observables are not economically large, but statistically significant, which is why we include these observables as interacted controls in our regressions (see below). Table 2 shows that conditional on being entrepreneurs, homeowners run smaller businesses, create less value added, and are less educated than renters. Table 2 is not consistent with the notion that in this sample of entrepreneurs, homeowners are richer, more educated, or otherwise more able to run a business.

Panel C describes the personal characteristics of the entrepreneurs in our sample. In this large, representative sample of entrepreneurs, we find that self-employment accounts for a large fraction of the sample, which is consistent with U.S. studies (Hurst and Pugsley, 2012). Only 23% of the entrepreneurs in our sample have a college degree, and 41% have technical training comparable to an associate's degree in the United States. Before starting their business, 36% of respondents were unemployed and 10% were inactive. Many of these businesses are not incorporated. Forty-four percent take the legal form of a sole proprietorship, a number similar to Levine and Rubinstein (2013). Figure 2 reports the industry distribution of the firms in our sample. As expected in a representative sample of newly created firms, construction, retail, personal services and business

services are the most common industries.

Overall, because of the large fraction of uneducated, formerly unemployed individuals, the homeownership rate among entrepreneurs is relatively low. In this sample, only 29% of these entrepreneurs are homeowners, whereas, in 2010, 58% of households in France own their house.

2.2 Extensive Margin Sample

Our second dataset uses the yearly waves of the French Labor Force Survey from 1992 to 2002 ("Enquête Emploi"), a three-year rotating panel, which is in many ways similar to the US PSID. The unit of observation is the home address, so that the survey misses households that move. However, conditional on respondents staying in the same home, this survey allows us to observe transitions from employment to entrepreneurship/self-employment during the three years in which an individual is surveyed. Importantly for our purpose, these data also contain information on home ownership, as well as on the geographic location of the respondent.

We focus on observations corresponding to individuals that are surveyed for the second time, that is, individuals who are staying in the sample for one more year. We also restrict ourselves to household heads ("personne de référence"). Given that we are studying housing collateral, only one person per household should be able to pledge the household's house to outside investors. This person is likely to be the head of the household. We also drop retirees and students from the original sample, as well as individuals under 20 or older than 64. Because we are studying the transition into entrepreneurship, we also drop existing entrepreneurs. Table 3, panel B, presents summary statistics for the characteristics of individuals in this sample. Overall, the sample has 73,390 observations, corresponding to approximately 6,600 household's head surveyed every year from 1992 to 2002. Fifty-eight percent of individuals surveyed own their house and 7% are unemployed. The median respondent is 43 years old. Thirteen percent of respondents are women and 7% are foreigners. Finally, 38% of the respondents have no diploma, whereas 8% have a college degree. We also obtain from the survey a job description for the respondent's father. This job description contains 18 items (school teacher, technicians, driver, etc.). This is potentially an

important variable to capture heterogeneity in wealth. Table 4 compares characteristics of owners and renters. This comparison is quite different from what we observed on the selected sample of entrepreneurs in Table 2. For instance, while new entrepreneurs who own a house are less educated and have smaller businesses, in the population of non-entrepreneurs in the labor force survey, wealth and education are positively correlated with home ownership. For each individual in the sample, we define a dummy equal to 1 if the household head starts a business in the following year, which corresponds to year 3 in the survey for this individual. The average probability of transition into entrepreneurship is 1.4%.

We merge this dataset with the sample of regional house prices described in Section 2.1. We calculate, each year t and for each of our 25 regions, the cumulative growth of house prices between year $t-6$ and year $t-1$. Table 3, panel A, reports summary statistics for cumulative house price growth across regions. The median rate for the five-year regional house price growth in our sample period (1992-2002) is 14%. There is again substantial heterogeneity across regions: the standard deviation of the five-year house price growth is 20%.

2.3 Aggregate Data

As a complement to our individual-level results on the decision to start a business, we run aggregate regressions at the département level. A département is a geographic sub-division of France, which is finer than a region, the geographic division for which house prices are available in our sample period. A département is comparable to an MSA in the US. It has on average around 600,000 inhabitants. There are 94 départements in France. The alternative procedure of investigating aggregated outcomes is a useful robustness check for our results since (1) we expect our individual-level analysis to hold also at a more aggregated level and (2) this analysis is performed on alternative, exhaustive administrative datasets.

To construct our sample of aggregate outcomes, we first use the 1990 exhaustive French Census. This allows us to compute the fraction of homeowners in 1990, defined as the fraction of first houses (as opposed to secondary houses) in the département that are owned by their occupants. It also

provides us with the size of the active population in the département in 1990. We measure firm creation at the département level by aggregating information from the Business Creation Registry maintained by the French statistical office (INSEE). This dataset contains the universe of firms created in France with their precise date, location, legal form (limited liability corporation or sole proprietorship), and employment at creation. We also obtain information from INSEE on the industry composition of the workforce by département for 1990. This classification uses 5 large industries (agriculture, manufacturing, construction, for-profit services, non-profit services). The final sample is defined over the 1991-2002 period and contains 1,118 observations. Table 3, panel C, presents summary statistics for this sample.

3 Empirical Strategy

We perform three sets of empirical analyses. The first focuses on the intensive margin of entrepreneurship, namely post-entry growth of newly created businesses conditional on entry, at the individual level. The second focuses on the extensive margin of entrepreneurship, namely the probability of entry into entrepreneurship at the individual level. The third focuses on the extensive margin of entrepreneurship, but at the aggregate (département) level.

3.1 Intensive Margin Regressions

To study post-entry growth and survival, we estimate the following regression, where i is an entrepreneur/firm and j is the région of location of the entrepreneur:

$$\begin{aligned} Y_{ij}^{1999} = \alpha + \beta \cdot D(owner)_i \times \Delta p_j^{1992 \to 1997} + \theta \cdot D(Owner)_i \\ + \gamma \cdot Z_i + \tau \cdot Z_i \times \Delta p_j^{1992 \to 1997} + \delta_l + \delta_{\text{industry} \times \text{region}} + \varepsilon_{i,j}. \end{aligned} \tag{1}$$

The 1999 upper script denotes the fact that the outcome variable is measured in 1999, that is, for the first whole fiscal year after creation, which occurs in 1998. The outcome variables we

consider are the logarithm one plus total assets, total sales, number of employees, total debt, value added, and total wage bill. $D(owner)$ is a dummy equal to 1 if the entrepreneur is a homeowner. $\Delta p_j^{1992\to1997}$ is real estate price growth in region j from 1992 to 1997. δ_l are département fixed effects, where, once again a département is a geographic sub-division of a region. $\delta_{\text{industry}\times\text{region}}$ are industry-by-region fixed effect, meant to capture region-industry specific investment opportunities. The Z_is are control variables for the business owner or for the firm she creates, which are also interacted with past house price growth $\Delta p_j^{1992\to1997}$.

Equation (1) can be interpreted as a difference-in-difference strategy. The first difference can be thought of as a comparison between the size of new businesses created by homeowners in regions with high house price growth from 1993 to 1998 and regions with low house price growth from 1993 to 1998. Intuitively, if entrepreneurs need real estate collateral in order to access external financing, homeowners should be able to create larger firms in regions that recently experienced large real estate inflation relative to regions with smaller house price appreciation. Renters should be thought of as a "control" group: a group of entrepreneurs who are not exposed to variations in collateral values (the treatment) but who are exposed to similar local demand shocks / investment opportunities as homeowners (the "treated" group). A positive β coefficient— our coefficient of interest— in equation (1) would indicate that, in regions with high house price growth, homeowners create larger firms than renters and this relative to regions with smaller house price growth. The null hypothesis that collateral values are irrelevant for entrepreneurial activity would lead to $\beta = 0$.

The comparison between renters and homeowners is one of the key difference between our approach and what people have traditionally done in the literature (Hurst and Lusardi (2004) and Adelino et al. (2013)). Our approach relies on the identifying assumption that the size gap between firms created by homeowners and renters is independent of the dynamics of the local housing market, except for the role played by collateral.

Of course, this assumption is strong, because entrepreneurial characteristics might correlate both with the propensity to own a house and with the sensitivity of the entrepreneurs' investment opportunities to the local housing market. For instance, older entrepreneurs could be more

likely to both own a house and start a business in industries that have greater exposure to local economic activity, for example, in retail. If this is the case, then failing to control for age, and the interaction of age with the local growth in house prices would lead to an upward-bias in the estimate of β. More generally, if the elasticity of size at creation to past house price appreciation depends on unobserved characteristics that themselves determine home ownership, the identifying assumption is no longer valid. We partially alleviate this concern by controlling in equation (1) for a variety of personal/firm characteristics that might be correlated with the own-versus-rent decision. Precisely, we include controls for the business owner (employment status previous to becoming an entrepreneur, age, education, gender, previous job description, presence of an entrepreneurial background and a serial entrepreneurship dummy) or for the firm she creates (legal form of the business — sole proprietorship or limited liability corporation — industry (36 industry classification), whether the business is operated from the entrepreneur's home or not). By interacting these variables with our price growth variable in equation (1), we ensure our effect is not driven by composition effects arising from renters having different observable characteristics than homeowners. It is important to stress, however, that, as in Chaney et al. (2012), we ultimately do not have an instrument for the home ownership status of these entrepreneurs and this is a limitation of the analysis.

Another possible concern with the interpretation of equation (1) is that renters may also be affected by changes in house prices. If rents respond rapidly to changes in local housing markets, rising house prices can generate a negative income shock to renting households. We first note that at least in the short-run, the institutions of the rental market in France should make this effect quantitatively negligible. This is because individual renting contracts have a five-year maturity during which rents cannot be increased faster than inflation. Consistent with this institutional rigidity, the French statistical office has shown in a recent study that from 1996 to 2010, real house prices have risen by some 85%, while real rents have only risen by 8% over the same period (Gallot et al., 2011). Unfortunately, long-term data on rents are not available for France. To confirm this result over a longer period and in the absence of French data, we use rent and house price data for

the United States from Davis et al. (2008) for the 1960-2013 period. We find an average elasticity of the five-year real rent growth to the five-year real price growth of 0.15 (see Figure 3). Because rents only weakly respond to changes in house prices, even in the long run, we expect the collateral effect on owners to largely dominate the effect on the cash flows of renters.

We also investigate how access to valuable collateral affects entrepreneurial outcome in the long run. To this end, we estimate equation (1) but replace the outcome variables measured in 1999 with the same outcome variables measured in later years (up to 2005). This analysis is conditional on the firm's survival. We separately examine the role of financing constraints on survival, by using a survival dummy for various horizons (2, 3, 4, and 5 years) as a dependent variable in equation (1).

3.1.1 Estimation

Equation (1) is estimated using OLS. The standard errors clustered at the region by home ownership level. With 25 regions, this results in 50 clusters. Our strategy can be interpreted as a difference-in-difference analysis where homeowners are the treated population and renters the control population and the treatment varies at the region level (heterogeneous house price growth across regions). Clustering at the region by home ownership level is thus similar to clustering at the level of the unit of treatment, which is standard in experimental settings.

We provide two separate robustness checks for this estimation procedure. First, we also cluster the standard errors at the region level. Since we only have 25 clusters, we use the wild-t cluster bootstrap method of Cameron et al. (2008). [3] Second, we aggregate our data at the regional level

[3]This bootstraph procedure is done in the following way. We first compute the t-statistics for the estimates of β in equation (1), using the standard clustering approach. We then re-estimate this model under the null that $\beta = 0$, which provides with estimates for the residuals $\hat{\epsilon}$ and the other coefficient estimates in equation (1). We construct a wild dependent variables by multiplying all the estimated residuals in a given region by a random number generated from $\{-1, 1\}$ with equal probability and adding the resulting number to the predicted value generated under the null. We then simply estimate equation (1) using this wild dependent variable instead of the actual data and compute the t-statistics of the estimate of β. By comparing the original t-statistics for the estimate of β with the distribution of these wild t-statistics, we obtain a p-value for the original t-statistics.

in the following way. First, for each region $j \in [1, 25]$, we estimate the following equation:

$$Y_{ij}^{1999} = \alpha'_j + \beta'_j \cdot D(owner)_i + \gamma'_j \cdot Z_i + \delta'_l + \eta_{i,j}. \tag{2}$$

β'_j thus measures the average size differential at creation in region j between homeowners and renters, conditional on Z. Z is the same set of control variables as used in the main estimation. In a second stage, we simply regress this β'_j on past house price growth $\Delta p_j^{1992\to1997}$:

$$\text{For } j = 1 \dots 25: \quad \beta'_j = a + \phi \cdot \Delta p_j^{1992\to1997} + \omega_{i,j}. \tag{3}$$

A positive ϕ shows that the average size differential at creation between homeowners and renters is positively correlated with past house price growth in the region. Under the null that collateral values have no effect on size at creation, ϕ is equal to 0. The standard error for ϕ is computed by standard bootstrap.

3.2 Extensive Margin Regressions

To study how the decision to start a business is affected by collateral values, we use our sample extracted from the Labor Force Survey. This sample consists of multiples cross-sections of non-business owners who may transition into self-employment from year t to year t+1. Each individual appears only once in the sample. Our estimating equation is the following, where i is an individual, j is a region and t is the year where the individual is surveyed:

$$\begin{aligned} E_{i,j,t+1} = \quad & \alpha + \beta \cdot D(owner)_{i,t} \times \Delta p_j^{t-6\to t-1} + \theta \cdot D(Owner)_{i,t} \\ & + \gamma \cdot Z_{i,t} + \tau \cdot Z_{i,t} \times \Delta p_j^{t-6\to t-1} + \delta_l + \delta_{jt} + \varepsilon_{i,j,t}, \end{aligned} \tag{4}$$

$E_{i,j,t+1}$ is a dummy variable equal to 1 if individual i living in region j and surveyed in year t becomes self-employed at date $t+1$. β is the coefficient of interest. $\Delta p_{j,t-6\to t-1}$ is the cumulative

house price growth in region j between year $t-6$ and year $t-1$. $Z_{i,t}$ are control variables: education dummies, gender, foreign dummy, past-year wage (or unemployment insurance benefit if unemployed), a dummy for past-year employment status (employed vs. unemployed), industry of occupation in year $t+1$, age and father's job description (14 items). δ_l are département fixed effects. δ_{jt} are region-year fixed effect and are meant to capture local investment opportunities. Under the null hypothesis that housing collateral does not matter for entrepreneurial decisions, β should be equal to 0.

The identification of equation (4) follows a logic similar to equation (1). It boils down to comparing the occupational choice of homeowners across regions with different past house price growth, using renters to control for the direct effect of local house prices on investment opportunities. A key difference with the identification in equation (1) is that we have now 11 repeated cross-sections of occupational choices (1992 to 2002). This brings additional identifying power from the time series of house prices. In the cross-section of regions, the estimate of β is larger if regions with higher house price growth experience more firm creation by home owners than renters (this source of identification is similar to that used in equation (1)). In the time-series, the estimate of β is larger when the relative entrepreneurial activity of owners and renters co-moves with accelerations in house prices within a given region. This second source of identification is specific to equation (4).

3.2.1 Estimation

Equation (4) is a linear probability model estimated using OLS. The standard errors clustered at the region by home ownership level. As for the estimation of equation (1), we confirm the robustness of our results in two ways. First, we also cluster the standard errors at the region level by using the wild-t cluster bootstrap method of Cameron et al. (2008). Second, we follow (Muller and Ibragimov (2010)) and perform a test similar to a Fama-Mc Beth procedure. We estimate equation (4) separately for each region j and retrieve a collection of 25 $\hat{\beta}_j$. We then simply perform a t-test for the average of these $\hat{\beta}_j$ to reject the null hypothesis that $\beta = 0$.

3.3 Aggregate Extensive-Margin Regressions

Finally, we use aggregate data to confirm the individual-level analysis of section 3.2. We estimate the following linear specification using OLS, where the unit of observation is now a département l in year t:

$$\frac{\text{New Firms}_{l,t}}{\text{Pop}_{l,t}} = \alpha + \beta \cdot \%owners_l^{1990} \times \Delta p_j^{t-6 \to t-1} + \tau \cdot Z_l^{1990} \times \Delta p_j^{t-6 \to t-1} + \delta_l + \eta_t \varepsilon_{i,j}. \quad (5)$$

$\%owners_j^{1990}$ is the fraction of homeowners in département j in 1990, $\Delta p_{j,t-6 \to t-1}$ is house price growth in the five years preceding year t, δ_j are département fixed effects, and η_t are year fixed-effects. $\frac{\text{New Firms}_{j,t}}{\text{Pop}_{j,t}}$ is the ratio of newly created firms to a measure of population in year t in département j. For the main regression, new firms consist only of limited liability corporations and corporations, because data on creation of sole proprietorship are available only from 1993 onward.[4] In our preferred specification, the normalization variable $\text{Pop}_{j,t}$ consists of the number of "active households" in the region. This number corresponds to the number of households whose head is active in the labor force and between 20 and 65 years old. We use this normalization —instead of total population— to check that our aggregate results provide estimates that are consistent with our "extensive margin" regressions, which are based on the sample of "active" households. We report asymptotic standard errors but compute the associated p-values using the wild bootstrap procedure of Cameron et al. (2008).

We also explore the effect of these collateral shocks across regions on employment in newly created firms. To do so, we exploit the fact that the exhaustive registry of new firms contains information on the number of jobs at creation. We thus simply use, as an alternative dependent variable in equation (5), the ratio of all jobs in newly created firms in a region, at the time of creation, normalized by the number of active households in this region.

[4] In an unreported robustness check, we verify that our effect holds when we consider all new firms creation, i.e. corporations and sole proprietorships, starting in 1993.

We control for the heterogeneity in the fraction of homeowners in a département by including the following set of covariates: the fraction of the working population in 1990 in the region working in Agriculture, Manufacturing, Construction, Service and non-profit Service, the size of the département measured by its population from the 1990 census, and the logarithm of the median wage in the département, obtained from the labor force survey in 1990.

4 Results

Our results provide support for the notion that the collateral channel constrains entrepreneurial activity, at both the intensive and extensive margins. We have three sets of results. First, conditional on entrepreneurship, entrepreneurs who start after receiving large housing capital gains in the years prior to entry are able to start larger firms in terms of total assets, employment, sales, value added, and wage bill. Second, employed individuals experiencing large housing capital gains are more likely to start a business than non-homeowners or homeowners living in regions with lower house price growth. Third, in the aggregate, the elasticity of business starts to local house prices is stronger in regions with a higher ownership rate.

4.1 Intensive Margin Individual-level Results

4.1.1 Results at creation

Table 5 reports the point estimates from the estimation of equation (1). The outcome variables are the natural logarithm of one plus total assets, sales, number of employees, debt, value added and total wage bill. The variable of interest is the interaction of the home owner dummy and house price appreciation from 1992 to 1997 (Owner $\times \Delta p$). The specification reported on Table 5 use the entire set of control variables introduced in Section 3.1. We do not report these controls for brevity.

Table 5 shows significant effects of collateral values on the size of newly created businesses, conditional on entry. Going from the 25th to the 75th percentile of house price growth from

1992 to 1997 (i.e., a 11 percentage point increase in house price growth) leads to a 12% (=1.1 × .11) increase in total assets, a 8.9% (=.81 × .11) increase in total sales and a 3.7% (=.34× .11) increase in employment. Consistent with the collateral channel, we find this larger scale of operation following housing capital gains is accompanied by larger debt levels: going again from the 25th to the 75th percentile of house price growth leads to a 9.7% (=.89 × .11) increase in total debt. We also investigate how this access to more valuable collateral affects the wages paid by the newly created firms, as well as total valued added. The estimated effect on the total compensation of employees is large (8.4% increase following an 11-percentage-point increase in house price growth). Total Value Added created by homeowners, measured as sales minus intermediary inputs, is also significantly larger following larger house price appreciation in the five years preceding the firm's creation. An 11 percentage point increase in house prices leads to a 7.1% (=.65 × .11) increase in value added. All the results in Table 5 are significant at the 1% confidence level, when standard errors are clustered at the region by ownership level. The wild bootstrap p-values are also all below 5%.

Table 5 shows the result of the estimation of equation (1) when all the controls Z are included in the regression. In Table 6, we present the estimate of β in equation (1) when we add the controls progressively into the analysis. We use the logarithm of one plus total assets (Column 1 to 4) and total sales (Column 5 to 8) as the dependent variables. Column 1 and 5 have only département and region by industry fixed effects. Column 2 and 6 add controls industry and legal status of the firm. Column 3 and 7 add controls for education, previous job description and previous employment status. Column 4 and 8 add controls for age, gender, entrepreneurial background and previous entrepreneurial activity. Table 6 shows that adding these controls change only slightly the estimation of β in equation (1), which hovers around 1 for total asset and .8 for total sales.

We further explore the robustness of our analysis by implementing the aggregation method described in Section 3.2.1. In a first stage, we compute, for each of the 25 regions in the sample, the outcome differential between homeowners and renters, conditional on the Z. In a second stage, we regress this region-level differential on past house price growth in the region from 1992 to 1997.

The standard errors are computed using a bootstrap procedure. The results are reported in Table 7, panel A. The results confirm our previous analysis. Firms started by homeowners following house price appreciation are larger, use more debt and create more value. As in Table 5, the estimated βs are all significantly different from 0 at the 1% confidence level. The magnitude of the effect is even larger.[5]. An 11 percentage points increase in house prices lead to a 16.5% increase in the relative size of firms created by homeowners vs. renters (total assets) and to a 16.5% increase as well in the relative debt used by firms created by homeowners vs. renters. Figure 4 plots the region-level estimate of β'_j in equation 2 as a function of past house price growth in region j from 1992 to 1997.

An important concern with the analysis so far is that past house price appreciation is proxying for local investment opportunities and that homeowners and renters tend to react differently to these opportunities, even after controlling for all the observable characteristics included in Z. To alleviate this concern, we use two variables to capture these local investment opportunities: (1) the region-level GDP growth from 1992 to 1997 and (2) the département-level change in the unemployment rate from 1992 to 1997. The interactions of these two variables with the homeownership dummy are included directly in the estimation of equation (1). The results are reported on Table 8. As can be seen from this table, the results are left almost unchanged relative to the main analysis of Table 5. Including the interaction of the home ownership dummy with past local GDP growth and past changes in local unemployment change the point estimate of β from 1.1 to 1 for total assets, .81 to .76 for total sales and leave unchanged the point estimate for debt. All results remain statistically significant at the 1% confidence level when standard errors are clustered at the region by ownership level. When using the wild-cluster bootstrap, the results using total employment (resp. debt) become significant only at the 6.4 and 6.6 % level respectively. All other estimates remain significant at the 5% confidence level. We also perform a similar robustness check using our aggregation method presented in Section 3.1.1. The results are

[5]Since the second step of the analysis does not weight the region-level size differential by the number of firms created in the region, the estimated effects do not have to coincided with the estimates from Table 5

presented in Table 7, Panel B. In this panel, we simply project the region-level size differential at creation between homeowners and renters, conditional on all the Z, on past house price growth from 1992 to 1997, as well as past GDP growth from 1992 to 1997 and département-level change in unemployment from 1992 to 1997. Panel B of Table 7 clearly shows that the inclusion of these two proxies for local investment opportunities has little if any effect on the relationship between the conditional size differential at creation between homeowners and renters and house price growth in the five years following creation.

Another version of the previous concern is that there is momentum in house prices, so that areas experiencing high house price growth from 1992 to 1997 also have high house price growth in the late 90s / early 200s, and thus good investment opportunities for homeowners. To address this concern, we simply augment equation (1) by adding the interaction of the homeownership dummy with the realize house price growth from 1999 to 2004. The results are presented in Table 10. Once again, the results are left almost unchanged relative to our main findings of Table 5. If anything, controlling for the future realization of local house price growth increase the magnitudes of the β coefficients estimated in Table 5. For instance, the coefficient estimated for total assets goes from 1.1 to 1.2 and the coefficient estimated for total debt goes from .89 to .99. All results remain statistically significant at the 1% level.

As a further robustness check, we verify that our results are robust to excluding Paris and its surrounding département ("Petite Couronne"). One potential worry is that these areas are large and experienced large price decline from 1992 to 1997, which could be driving our results. We thus re-estimate equation (1) but exclude these four regions from our sample. The results are presented in Table 10. The point estimates are left virtually unchanged relative to the main specification shown in Table 5. The main difference is that the wild-bootstrap p-values are now higher, which is most likely due to the decreased number of clusters (k=21) once Paris and the surrounding départements are excluded from the analysis. Nonetheless, all the results remain significant at least at the 10% significance level, even when use the wild-bootstrap p-values.

4.1.2 Long-run results

Our main finding so far have shown that financing friction affect the size of firms at creation. As emphasized by Midrigan and Xu (2013), this effect on size at entry as the potential to create significant effect on aggregate TFP and output. However, as Midrigan and Xu (2013) also point out, this effect can be largely mitigated after a few years, as firms accumulate enough profits to self-finance their growth. This is especially true if firms productivity shocks are persistent (Moll (2013)). In this Section, we try to directly address this question by investigating potential long-run effects of financing shocks at entry. Our analysis suggests that firms who were able to use higher collateral values to start on a larger scale are still significantly larger, even 7 years after creation. This is consistent either with a model of technology adoption (Midrigan and Xu (2013)) or with slower accumulation of internal funds for these firms that are constrained to start at a sub-optimal scale.

To establish our long-run result, we start from equation (1) and simply replace the dependent variable with an outcome measured in year t, with t going from 2000 to 2005. Importantly, we still use house price growth in the 5 years preceding creation as our main explanatory variable:

$$\begin{aligned} \forall t \in [2000, 2005],\ Y_{ij}^{t} \quad &= \alpha + \beta_t \cdot D(owner)_i \times \Delta p_j^{1992 \to 1997} + \theta_t \cdot D(Owner)_i \\ &+ \gamma_t \cdot Z_i + \tau_t \cdot Z_i \times \Delta p_j^{1992 \to 1997} + \delta_l + \delta_{\text{industry} \times \text{region}} + \varepsilon_{i,j}. \end{aligned} \tag{6}$$

One obvious issue with the previous model is that firms started by owners in regions that experienced large house price growth from 1992 to 1997 might be more likely to exit. Had they remained, these firms would have been small, so that their attrition create an upward bias on the estimate of β. To account for this potential endogenous attrition, we simply assign a 0 value for the dependent variables of firms that exit the sample. We provide a separate analysis for survival probabilities below in this Section.

Table 11 reports point estimate for β_t in equation (6) using OLS and clustering the standard errors at the region by ownership level. This is done for the six outcome variables considered so

far in the analysis (logarithm of one plus total assets, sales, number of employees, debt, value added and wage bill). Figure 5 simply plots the β_t coefficients and their associated 90% confidence intervals as a function of t for these six outcome variables. Our results can be summarized in the following way. First, we find that all the coefficient estimates remain positive for all years. Second, except in 2002, most estimate are statistically significant at least at the 10% confidence level. In 2001, 2004 and 2005 for instance, all six estimates of β are significant at the 10% confidence level. Third, except in 2002, the estimates for β_t are remarkably stable in time and close to their 1999 value. Consider column (1) of Table 11, which shows the β estimates when the dependent variable is the log of 1 plus total assets. We see that the coefficients varies from .93 in 2000 to 1 in 2005, with a lowest value at .39 in 2002 and .74 in 2003. The 2004 estimate of β for total assets is even equal to its 1999 estimate. In other words, the asset differential generated at creation by the access to more valuable collateral has a similar magnitude 5 years after the firms have been created. Using the 2005 estimates, we see that firms that started following an 11 percentage point increase in house prices from 1992 to 1997 are still 11% larger in 2005. The stability of the β coefficient is similar for most outcome variables. For instance, excluding 2002 — where all point estimates are small and insignificant — we find that the average β coefficient estimated when debt is the dependent variable is equal to .75, which is close to its 1999 value of .89. In sum, Figure 5 and Table 11 show that collateral shocks have a persistent effect on the long-run behavior of newly created firms.

We assess the robustness of this result by using a similar aggregation method as introduced in Section 3.1.1. In a first stage, we estimate for each region separately the size differential in year t between homeowners and renters, conditional on the Z used in equation (1). We then regress this region-specific conditional size differential measured in year t on past house price growth measured from 1992 to 1997. The resulting coefficient estimates are reported on Table 12. The results are broadly consistent with those from table 11.

One issue with our long-run analysis is that subsequent movement in house prices could interfere with our results. More precisely, if house price exhibit momentum at the 5 year horizon, firms

started by homeowners following a rise in house prices from 1992 to 1997 would also experience a subsequent increase in collateral value from 2000 to 2005. This subsequent increase in collateral value could explain why these firms are able to remain larger than the other firms in the sample. If this were the case, the results from Table 11 could not be interpreted as the long-run effects of initial conditions and would be more in line with a standard collateral channel as in **?**. We first address this issue by looking directly at house price dynamics in this sample. We first show that house price growth from 1992 to 1997, which we use as our measure of collateral gains for owners in 1998, is negatively correlated with house price growth from 2000 to 2005. Figure 6 plots region-level house price growth from 2000 to 2005 against region-level house price growth from 1992 to 1997. Far from momentum, house price growth in this period and at this horizon exhibit reversal. The slope of the relationship between house price growth from 1999 to 2004 is -.6, is statistically significant at the 5% confidence level and the R^2 of this relationship is 24%. Hence firms that we consider collateral rich at birth in 1998 experience lower house price growth after creation, which, if anything, should downward bias the effect of our main long-run analysis. To more precisely address the concern, we augment equation (6) by including an interaction term for house price growth from 1999 to t interacted with the home-ownership dummy. This additional control should capture the effect of post-creation variations in collateral values. The results from this estimation are presented in Table 13, panel A. The point estimate for each year are of the same magnitude than what we find when we do not control for the realized price growth from 1999 to t. The point estimate on the interaction of house price growth from 1999 to t and the home ownership dummy is insignificant and small in magnitude.

Finally, panel B of Table 13 estimates equation (6) on the sample of surviving firms only. We find that, even conditional on survival, there is still a significant long run effect of initial collateral values on the size of the firm. The effect is, however, almost half the effect we find when we include the exiting firms in the analysis. In other words, it seems that firms with higher initial collateral values are, if anything, less likely to exit the sample, so that not accounting for the attrition of firms with lower initial collateral values lead to an under-estimation of the long-run effect of initial

collateral value shocks. We explore this question of attrition in more details in the next Section.

4.2 Survival and initial collateral value

One possible interpretation of our results so far is that collateral shocks make homeowners less risk averse, because risk aversion is a decreasing function of wealth. As a result, homeowners experience large housing capital gains react more to local investment opportunities and in particular start larger firms in response to these investment opportunities. The natural consequence of this risk-taking hypothesis is that firms started by these wealthier homeowners should also be riskier at the same time. Since we measure directly failure in our sample, we can easily test this hypothesis in the data.[6]

To test for this risk-taking hypothesis, we estimate equation ((1)) but use as a dependent variable a dummy variable equal to 1 when the firm is present in year t but exit in year $t+1$ and 0 if the firm is present in both year t and $t+1$. We use a linear probability model and cluster standard errors at the region by ownership level. We again also provide p-values from a wild-cluster bootstrap at the region level. A positive coefficient on Owner $\times \Delta p$ would indicate that collateral-rich firms are more likely to exit the sample and thus would be consistent with the risk-taking hypothesis. Table 14 shows the result from this failure analysis. Column 1 to 6 looks at instantaneous failure hazard rate in year t, while column 7 and 8 use the probability that the firm will exit the sample before 2005 as a dependent variable. We control for characteristics of the business owner (occupation previous to becoming an entrepreneur, age, education, gender), legal form of the business (sole proprietorship or corporation), industry, whether the firm is located in the owner's home, whether the entrepreneur has an entrepreneurial background, a serial entrepreneur dummy as well as all interactions of these controls with Δp. The regressions also include département fixed effects, as well as region-by-industry fixed effects.

[6] Another version of this hypothesis is that risk-aversion is negatively correlated with home ownership so that home owners are prone to starting larger firms when local business conditions improve. The literature on home ownership is not decisive in terms of the correlation between home ownership and risk aversion. Sinai and Souleles (2005) argues that an important margin in the rent-vs.-buy decision is hedging, which would suggest that risk aversion is *negatively* correlated with home ownership.

The results show that higher collateral values at the origin leads, if anything, to a *lower* probability of exit. We find that the effect of the interaction of house price growth from 1992 to 1997 and the home ownership dummy on instantaneous failure hazard rate is insignificant for all but one year (2003) and it is then negative — implying that larger collateral values at creation lead to a lower conditional failure hazard rate in 2003. Consistent with the results from column 1 to 6, column 7 shows that the overall probability of exiting the sample before 2005 is negatively but insignificantly correlated with the interaction of house price growth from 1992 to 1997 and the home ownership dummy. In column 8, we additionally control for the interaction of the home ownership dummy and region-level GDP growth from 1992 to 1997 and département level change in unemployment rate from 1992 to 1997. This makes the point estimate of β marginally significant. Taken together, these results from Table 14 are broadly inconsistent with the hypothesis that access to more valuable collateral increases risk taking.

4.3 Extensive Margin: Individual-level Results

The previous section discussed regressions that estimate the effect of house price appreciation on homeowners' business success conditional on entry. This section looks at the entry decision itself. To this end, we use the panel extracted from the French Labor Force Survey and described in section 2.2. In this sample, the unconditional probability of becoming an entrepreneur is about 1.3%. This section asks whether, relative to renters, this probability is systematically different for homeowners who have experienced substantial housing capital gains in the past five years relative to homeowners in regions with lower house price appreciation.

Table 15 presents the estimation of equation (4). All regressions include département fixed effects, as well as region-by-year fixed effects. Column (1) has no additional control. Column (2) adds controls for education (four dummies), as well as their interaction with Δp. Column (3) adds controls and interaction terms for previous year salary (or UI benefit if eligible) and previous year employment status. Column (4) adds controls and interaction terms for age. Column (5) adds controls and interaction terms for gender and nationality. Column (6) adds controls and interaction

terms for current industry. Column (7) adds controls and interaction terms for the respondent's father's job description. Column (8) additionally controls for change in unemployment rate in the département from year t-6 to year t-1, as well as its interaction with the ownership dummy, to control for local investment opportunities.[7]

All these specifications yield positive and statistically significant estimates for the interaction of house price growth and the homeownership dummy. The one control variable that seems to have a significant influence on the estimation of the main coefficient of interest is age: including age and its interaction with Δp moves the point estimate of β from .014 to .011. This is not surprising since it is well known that age is one of the main determinant of home ownership. At the same time, it turns out that in our sample, older individuals are also more likely to start businesses in locations that have recently experienced a rise in house prices. Apart from age, the inclusion of all the other control variables have very little effects on the main coefficient of interest.

The effects we report in Table 15 are of a sizable magnitude. Using the point estimates from column 7, we find that going from the 25^{th} to the 75^{th} percentile of house price growth (a 16-percentage-point increase) leads to a .15-percentage-point (.0094$\times$ .16) increase in the probability of starting up a business. Because the unconditional probability of starting a business is 1.4%, the estimate corresponds to an 11% increase in the probability of becoming an entrepreneur. This results are robust to clustering at the region level or performing a Fama-Mc Beth-like procedure as explained in Section 3.2.1.

These results from Table 15 thus show the availability of more valuable collateral affects individuals' occupational choices and thus provide evidence on the role of liquidity constraints on entrepreneurial entry.

We finish this section by emphasizing the importance of controlling for the homeownership status of the individual. In a seminal contribution, Hurst and Lusardi (2004) use data from the PSID to regress the probability of starting a business on past house price appreciation, without

[7]We do not use region-level GDP growth as a control in this specification as the variable is available only from 1995 onwards and its inclusion thus leads to a large drop in the sample size.

interacting the price appreciation with individual or average ownership rates. Hurst and Lusardi (2004) fail to find a significant and positive effect of past house price growth on the entrepreneurship decision and interpret this finding as a rejection of the hypothesis that credit constraints significantly reduce entrepreneurial activity. In Table 16, we report results that are consistent with the results in Hurst and Lusardi (2004), that is, a weak, negative relationship between recent past house price appreciation in the region where the individual is located and the decision to become an entrepreneur. In addition to establishing the comparability of our sample with the PSID sample used by Hurst and Lusardi (2004), this table shows how omitting to interact past house price appreciation with the homeownership status can affect the results significantly in our sample at least.

Table 16 also helps rule out one alternative interpretation of our results, which would rely on a form of a bank-lending channel. Assume banks are local and own local real estate. Home price increases would then lead to an increase in credit supply, which might be channeled in priority to collateral owners. This mechanism would be an alternative explanation of our results. If such a story did hold, however, one would expect the point estimate for Δp in Table 16 to be positive and significant. The fact that it is significantly negative tends to rule out this explanation.

4.4 Comparative Statics

In this Section, we provide two sample splits, which help reinforcing the interpretation of our results in terms of evidence of a collateral channel for entrepreneurship.

In the first one, we simply re-estimate our intensive-margin equation, equation (1), separately for entrepreneurs who were previously unemployed vs. previously employed. Intuitively, access to unsecured credit for entrepreneurial motives is likely to be much more restricted for individuals who are currently unemployed vs. individuals currently employed.[8] The results are shown in Table 17 for three outcome variables (Assets, Sales and Debt). We find that indeed, the effect of

[8]"Easing acces to credit for unemployed individuals" was one of the 20 priorities highlighted by the French Department of Labor in 2005 in its annual report.

collateral values on size or debt used at creation is more than twice larger for previously unemployed entrepreneurs than it is for previously employed entrepreneurs. For an unemployed entrepreneur owning its house, an increase in house price growth from 1992 to 1997 of 11 percentage points (the inter-quartile range of house price growth in this sample) leads to assets at creation that are almost 18% larger relative to unemployed homeowners in regions with previously flat house prices. For previously employed entrepreneurs, this effect is only 6.9%. This difference between previous unemployed vs. employed entrepreneurs is most striking when looking at debt: for a previously unemployed entrepreneur owning its house, an increase in past house price growth by 11 percentage points lead to a 16.5% increase in debt at creation relative to unemployed entrepreneurs in region with previously flat house prices. This effect is only 5% for previously employed entrepreneurs and is not statistically significant.

We perform a similar comparative static for the extensive margin analysis. In the sample of individual from the labor force survey, we do not have enough unemployed individuals to split the sample in terms of current employment status without loosing statistical power. We thus provide another sample split along the income dimension. Each year, we split the cross-section of individuals in the sample into individuals with income above and income below the median income in the sample. We then simply estimate equation (4) separately for individuals below the median income and individuals above the median income. The underlying idea is again that access to unsecured credit will be much harder for individuals whose current income is smaller. The results are shown in Table 18. In column (1) and (2), we only control for département fixed effects as well as region-year fixed effects. In column (3) and (4) adds controls for education (four dummies), previous year employment status, age, gender, nationality, father's job description and current industry, as well as their interactions with house price growth in the region from year t-6 to year t-1. Column (5) and (6) additionally controls for change in unemployment rate in the département from year t-6 to year t-1, and its interaction with the home ownership dummy, to account for local investment opportunities.

Consistent with the previous analysis, we also find that the effect of collateral values on entry

decisions are in fact much larger for individuals in the bottom-half of the income distribution. Precisely, Table 18 shows that the point estimate for β in the most conservative specification is .023 for individuals with income below the medan income and .0042 for individuals above the median income. Quantitatively, this means that for a 16 percentage point increase in house price growth from $t-6$ to $t-1$ (the inter-quartile range of house price growth in this sample) leads to a .36 percentage point increase in the probability to start a business for an individual in the bottom-half of the income distribution. For an individual in the top-half of the income distribution, this number is only .07 percentage points. In our sample, individuals in the bottom half of the income distribution are twice more likely to start-up businesses unconditionally (1.8% vs. .95%). These effects can thus be quantified as a 20% increase in the probability to start a business for individuals in the bottom-half of the income distribution and a 7% increase only in the probability to start a business for individuals in the top-half of the income distribution.

4.5 Extensive Margin: Aggregate Results

We have shown in the previous section that regions with lower house price growth experience lower entrepreneurial activity from homeowners living in that region. In this section, we investigate whether these effects aggregate up at the département level using separate, exhaustive census data. To this end, we estimate equation (5) and show that in départements with a larger fraction of homeowners, entrepreneurial activity depends more strongly on past house price growth, even after controlling for several département-level aggregate characteristics. We view this analysis as a useful exercise to (1) check the robustness of the extensive-margin results using other data sources and (2) quantify the aggregate effect of the collateral channel for entrepreneurial decisions.

Table 19 presents the results of an OLS estimation of equation (5), where standard errors are clustered at the region level. In this equation, we use two distinct measures of entrepreneurial activity at the département level: (1) the number of firms created per active household (Panel A) and (2) the employment in newly created firms in the département per active household (Panel B). We report both unweighted results (columns 1 and 3) and results weighted by the number

of active households in the département (columns 2 and 4). Columns 1 and 2 only include year and département fixed effects as controls. Columns 3 and 4 also control for the interaction of a region's industry composition, size, and median wage with past house price appreciation. All specifications yield positive and statistically significant coefficients. In our sample, entrepreneurial activity responds significantly more to past increases in house prices in regions with a larger fractions of homeowners.

The magnitudes we report in Table 19 are large, both for the effect of collateral values on business counts and induced job creation. Looking at the number of firms created, column 3 of Panel A —the unweighted specification including the full set of controls— shows that, taken at the median homeownership rate (.58%), a 20 percentage points increase in Δp (the inter-quartile range of house price growth in this sample) leads to an increase in the number of newly created firms by .05 % of the number of active households in the region (.004×.58×.20). Given that the average region has some 150,000 such households, this percentage corresponds to an increase in the number of new firms by about 80. This number should be compared with the average number of newly created firms in the département, which is about 700 per year. Hence a 20 percentage points increase in house price growth leads to an increase by 13% (= 80/700) of the number of newly created firms in the département. To quantify the effect of collateral values on direct job creation induced by newly created firms, we look at the unweighted estimate with the full set of controls of column 3, Panel B. At the average homeownership rate, a 20 percentage points increase in house price growth leads to an increase in jobs at newly created firms by .02% of the number of active households in the département ($= .018 \times .58 \times .20$). This increase corresponds to about 300 jobs by département, or $300 \times 95 = 28,500$ jobs nationwide (some .16% of total employment). Of course, highlighting that these estimates represent only partial equilibrium effects is crucial: they do not take into account potential crowding out on incumbent firms or any other form of general equilibrium effects.

We can also quantify the effect of financing constraints on firm and job creation by considering a fictitious economy where the homeownership rate is 100%. At the average house price growth

rate over a five year period in our sample, which is 16%, the estimate from Panel A, column 3 of Table 19 suggests that in this counterfactual economy, the number of newly created firms would be higher by about $150,000 \times .004 \times (1 - .58) \times .15 = 38$ new businesses by département, or a 5.4% increase. From the results in Panel B, column 3 of Table 19, we infer that an economy with a 100% homeownership rate would see an increase in aggregate employment of about 95,000 jobs. Again, we stress that these counterfactual analyses are only partial equilibrium effects and do not take into account general equilibrium effects that may arise in the counterfactual economy. For instance, incumbent firms may grow less as a result of new firms' entry (see Hombert et al. (2013) for a reduced-form analysis of crowding-out effects).

5 Conclusions

Using variations in local house prices, as well as variations in homeownership, this paper shows that collateral frictions matter for the creation of new firms, as well as for the size of newly created firms, both at the individual and regional level. Our paper highlights another channel through which house prices can affect aggregate activity. This channel is different from the one emphasized by Mian and Sufi (2012), who look at how declining house prices impair the balance sheet of levered households, contributing significantly to a decline in employment. Our analysis shows that declining house prices will also affect the supply of entrepreneurs, which may in turn deteriorate aggregate activity. Quantifying the relative importance of these two channels is an important task that we leave for further research.

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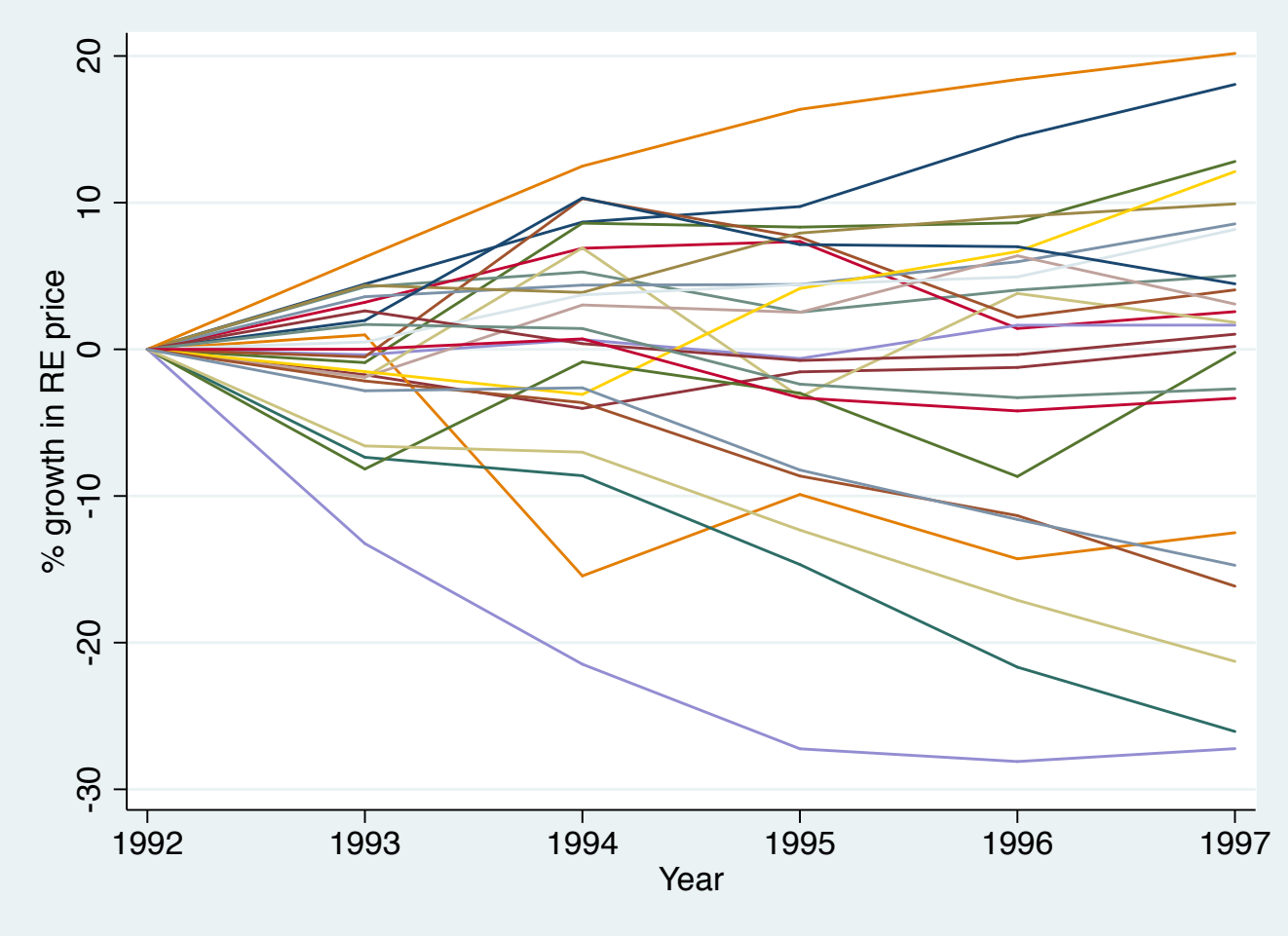

Figure 1: Cumulative House Price Growth across Regions.
The graph shows the cumulative house price growth from 1992 to 1997 across the 25 regions in the sample.

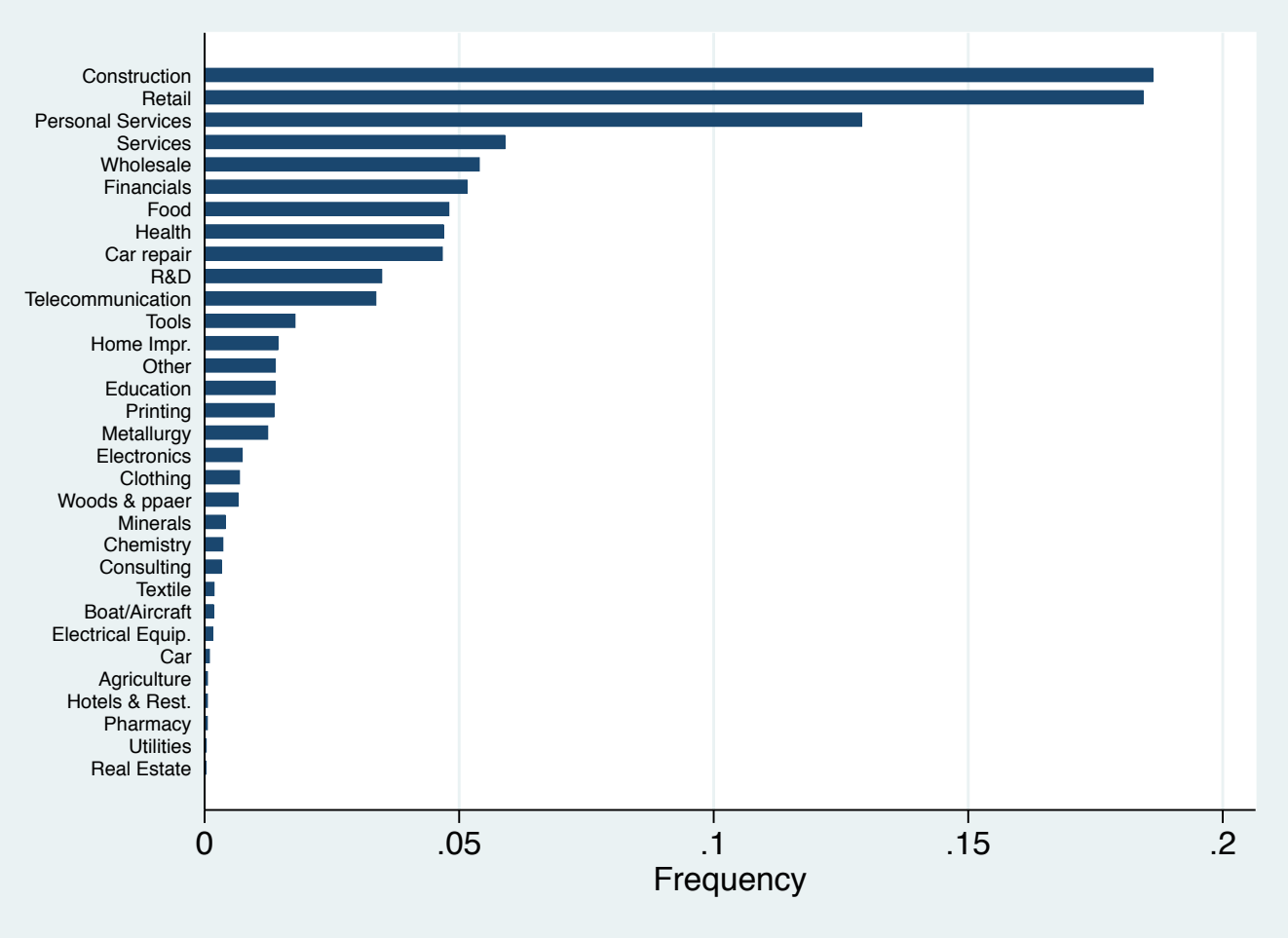

Figure 2: Industry Distribution of Newly Created Businesses.
The graph shows the industry distribution of the businesses created in the first half of 1998 that are in our sample.

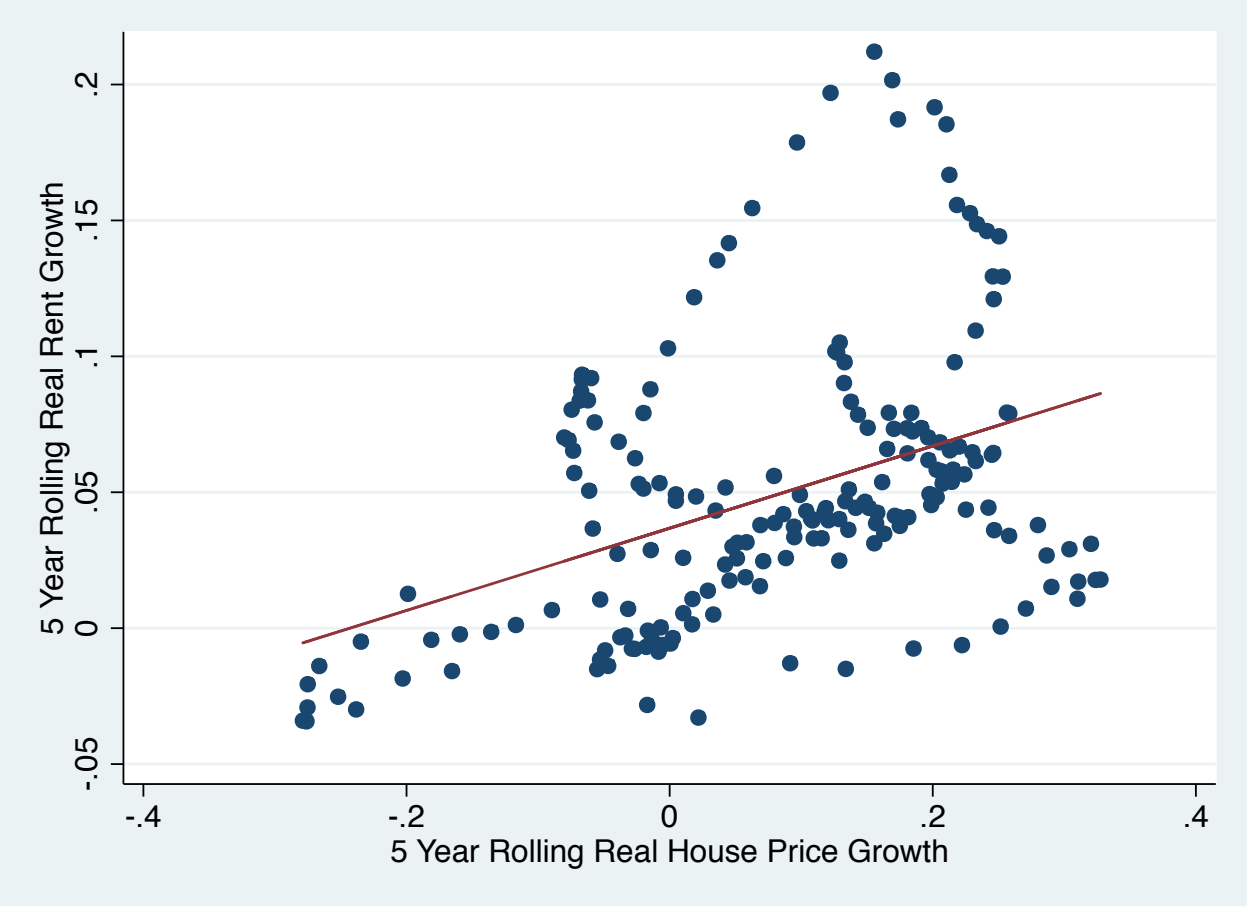

Figure 3: Elasticity of Rents to House Prices - Evidence from the United States
The data on average house prices and rents come from Davis et al. (2008); it is available from http://www.lincolninst.edu/resources/. CPI data are from the BLS. Every quarter between 1965:1 and 2013:1, we calculate the cumulative growth, over the past 20 quarters, of house prices and rents, net of CPI growth (inflation). We then report these data on the above scatter plot, where each plot represents one quarter between 1965:1 and 2013:1. The red line corresponds to the fitted linear regression of long-term rent growth on house price growth. The estimated long-term elasticity of rents to prices is 0.15. The Newey-West t-stat is 2.12 (p-value = 0.036).

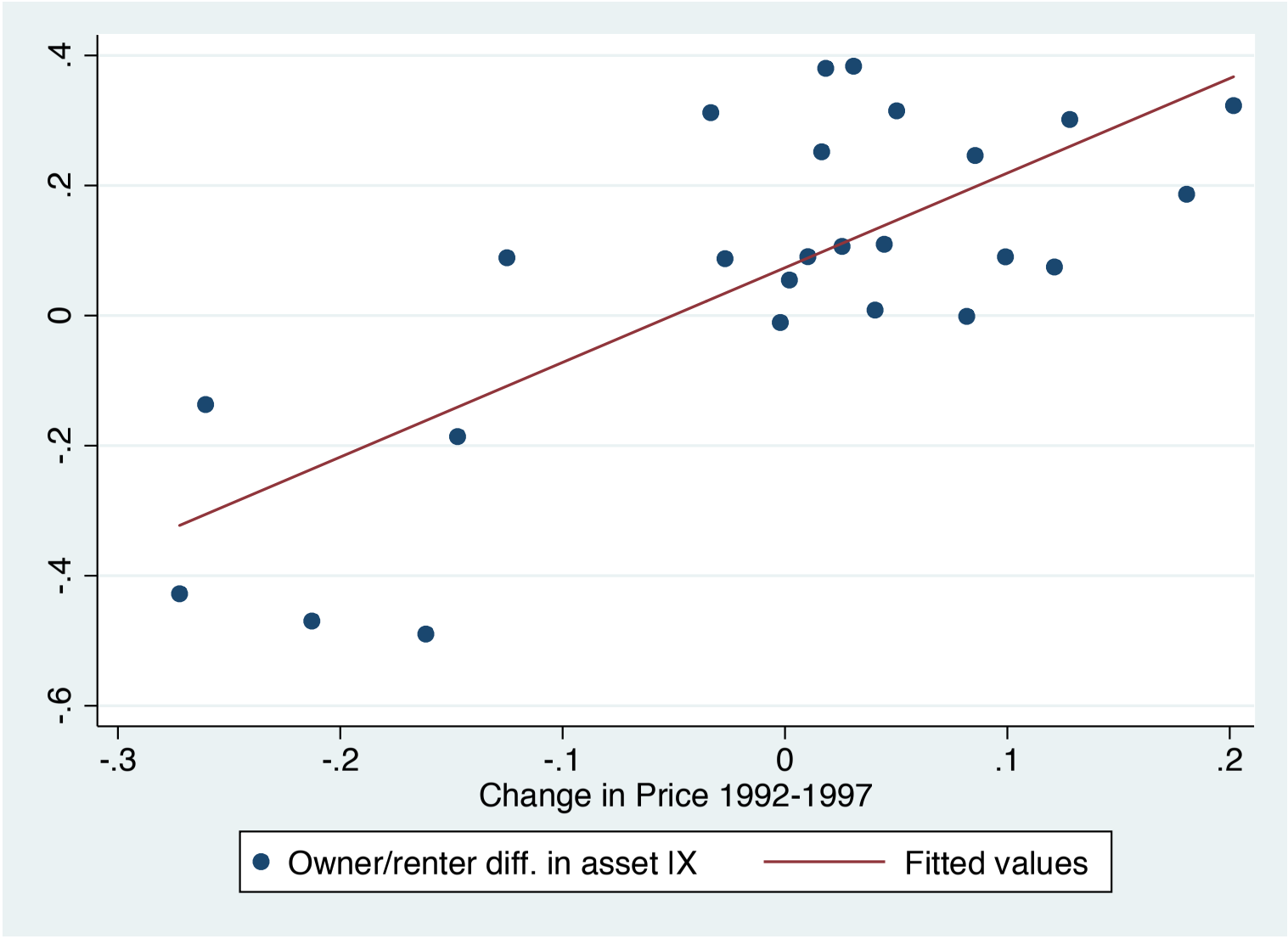

Figure 4: Real Estate Capital Gains and Total Assets: Aggregation
For each region j and entrepreneur i, we estimate: $\ln(Asset_{ij}^{1999}) = \alpha'_j + \beta'_j \cdot D(owner)_i + \gamma'_j \cdot Z_i + \delta'_l + \eta_{i,j}$. The graph plots the estimated $\hat{\beta'}_j$ on the y-axis as a function of house price growth from 1992 to 1997 on the x-axis. It shows that in regions where house prices have increased more, the conditional size differential at creation between homeowners and renters is larger. The slope of this relationship is equal to the coefficient reported on column 1 of Table 7.

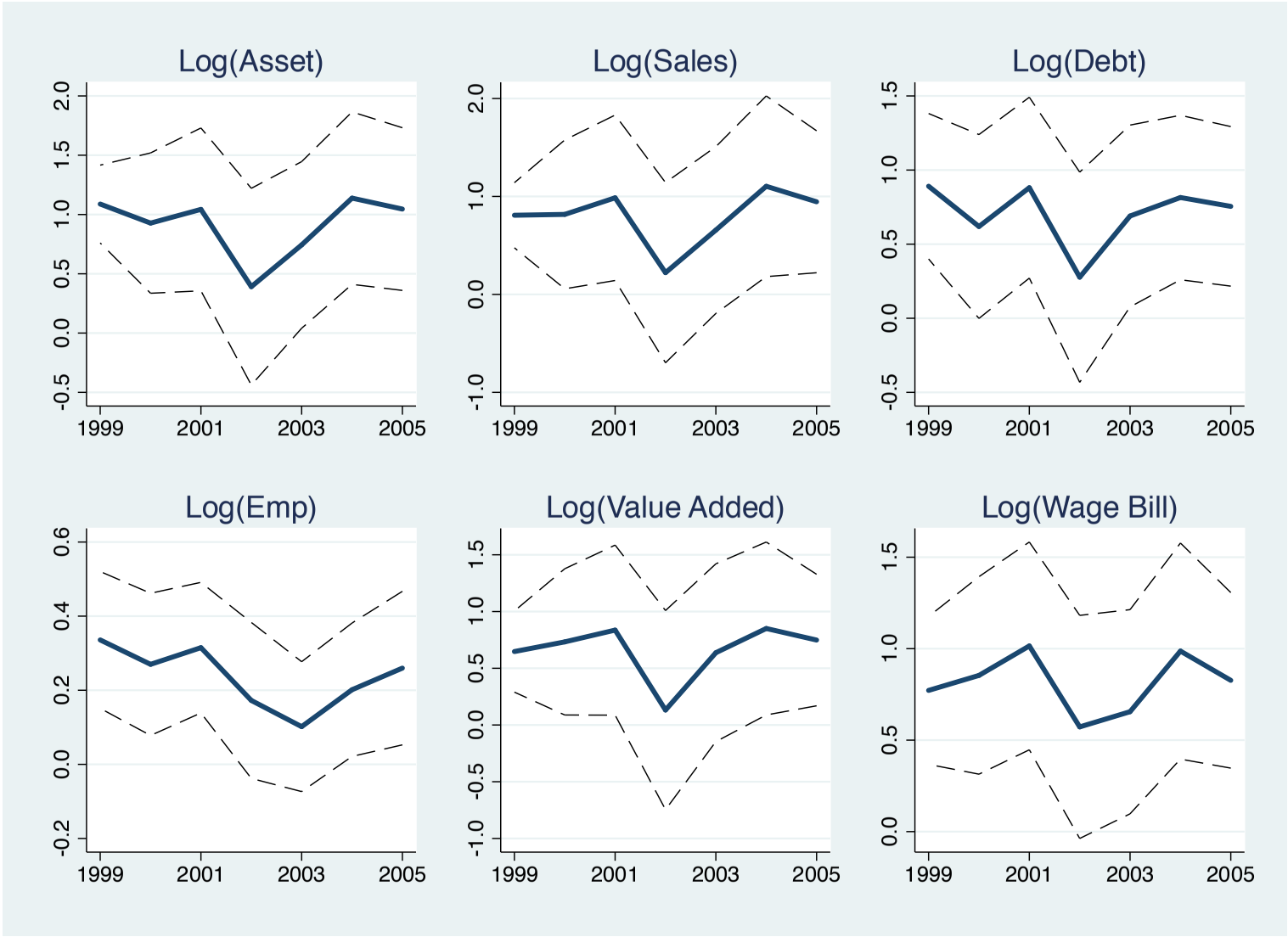

Figure 5: Real Estate Capital Gains and Entrepreneurial Outcomes: Long-run Effects
The graphs plot the point estimate and the 90% confidence intervals of the β coefficient in equation (6), where the outcome variable is measured in year t and is assigned a value of 0 if the firm has exited the sample. These regressions control for characteristics of the business owner (occupation previous to becoming an entrepreneur, age, education, gender), legal form of the business (sole proprietorship or corporation), industry, whether the firm is located in the owner's home, whether the entrepreneur has an entrepreneurial background, a serial entrepreneur dummy as well as all interactions of these controls with Δp. These regressions also include département fixed effects, as well as region-by-industry fixed effects. Standard errors are clustered at the region by ownership level. The outcome variables are the logarithm of one plus total assets (top left panel), total sales (top right panel), total debt (bottom left panel), total employment (bottom right panel).

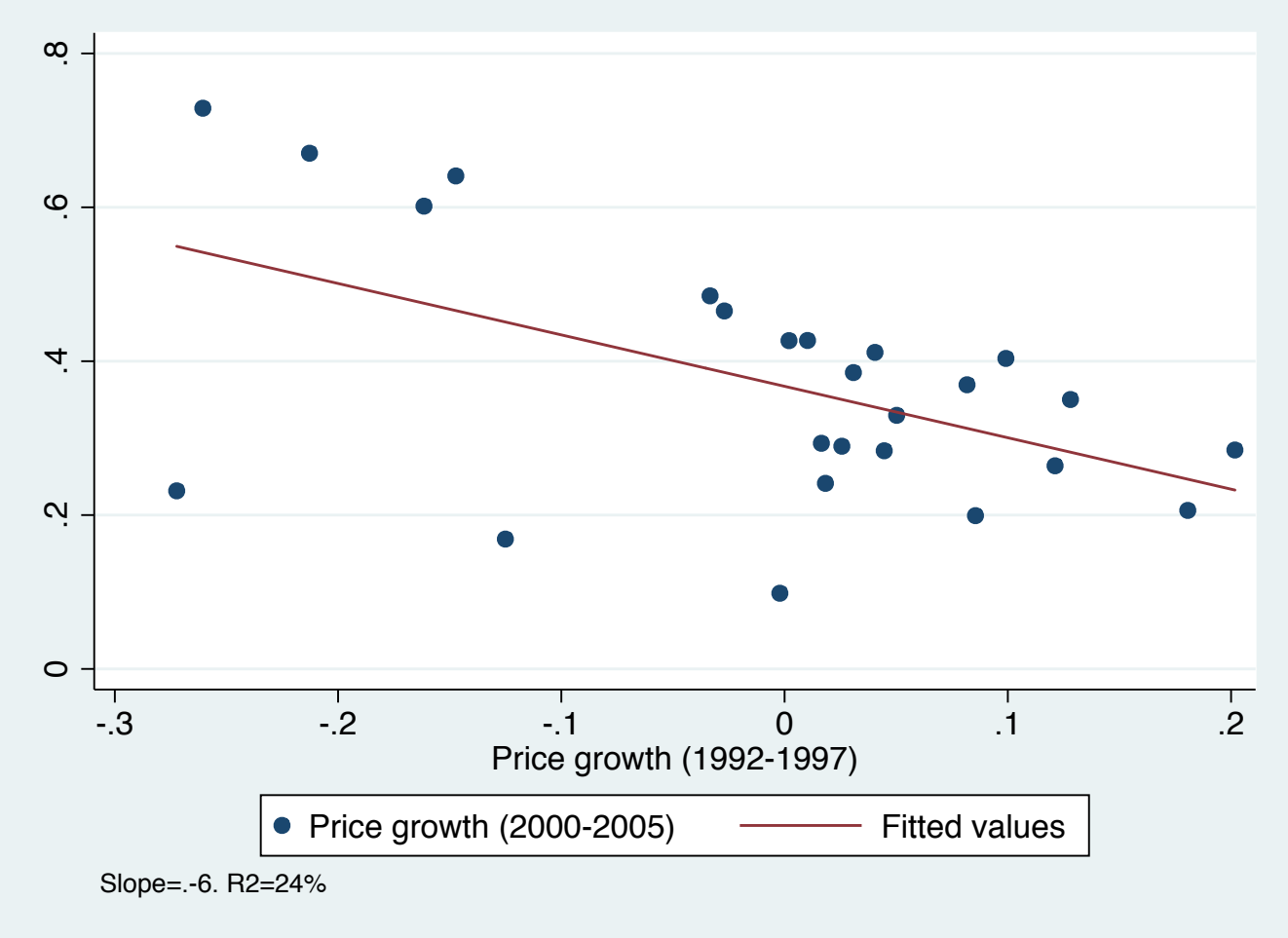

Figure 6: Correlation between House Price Growth from 1992-1997 and House Price Growth from 1999-2004 across the 25 regions in our sample

Table 1: Summary Statistics for the Intensive-Margin Analysis.
This table presents summary statistics for the sample used in the analysis of the effect of real estate capital gains on size at creation, conditional on entry. Panel A describes regional characteristics (house price growth, GDP growth from 1992-1997) and département characteristics (change in unemployment rate from 1992-1997). Panel B describes the characteristics of firms created by entrepreneurs surveyed in the SINE survey in 1998 and measured in 1999 in the tax file: total assets, total sales, total debt, number of employees, value added, and total wage bill. Panel C describes the characteristics of the entrepreneurs surveyed in the SINE survey in 1998: homeownership status, whether they are sole proprietors, whether they work from home, age, entrepreneurial background, gender, serial entrepreneur dummy, education measured by four dummies (No Diploma, Technical Training, High School Diploma, College Diploma), occupation previous to starting up a business (Employed, Unemployed, and Out-of-Workforce and prior job description (Craftsman, executive, intermediary profession, employee, worker)).

	Mean	Std. Dev.	p(10)	p(25)	p(50)	p(75)	p(90)	Obs.
Panel A: Regional characteristics								
$\frac{p^{92}}{p^{97}} - 1$	-0.00	0.13	-0.21	-0.03	0.02	0.08	0.13	25
$\Delta \text{GDP}^{92-97}$	0.14	0.03	0.11	0.12	0.13	0.16	0.17	25
$\Delta \text{unemp.}^{92-97}$	1.48	0.73	0.65	0.93	1.45	1.90	2.47	94
Panel B: Firm characteristics (1999 book values, in thousand Euros)								
Asset	131.42	1,069.83	7.01	18.45	40.86	96.35	221.51	9,164
Sales	208.61	1,282.24	14.48	35.14	73.18	171.43	394.54	9,164
Debt	102.15	968.53	3.20	11.28	29.88	75.92	179.43	9,164
# Employees	1.84	6.69	0.00	0.00	0.00	2.00	4.00	9,164
Value Added	130.21	615.34	9.45	23.78	48.78	112.51	248.80	9,164
Total Wage	49.78	218.50	0.30	3.05	12.50	44.74	108.70	9,164
Panel C: Entrepreneur characteristics								
Home Owner	0.29	0.45	0.00	0.00	0.00	1.00	1.00	9,164
Sole Proprietor	0.44	0.50	0.00	0.00	0.00	1.00	1.00	9,164
Business at Home	0.41	0.49	0.00	0.00	0.00	1.00	1.00	9,164
Age	37.51	9.34	26.00	30.00	36.00	44.00	50.00	9,164
Entr. background	0.72	0.45	0.00	0.00	1.00	1.00	1.00	9,164
Gender (Male==1)	0.77	0.42	0.00	1.00	1.00	1.00	1.00	9,164
Serial Ent.	0.26	0.44	0.00	0.00	0.00	1.00	1.00	9,164
Education								
No Diploma	0.18	0.39	0.00	0.00	0.00	0.00	1.00	9,164
Technical training	0.41	0.49	0.00	0.00	0.00	1.00	1.00	9,164
High School Diploma	0.18	0.39	0.00	0.00	0.00	0.00	1.00	9,164
College Diploma	0.23	0.42	0.00	0.00	0.00	0.00	1.00	9,164
Prior occupation								
Employed	0.53	0.50	0.00	0.00	1.00	1.00	1.00	9,164
Unemployed	0.36	0.48	0.00	0.00	0.00	1.00	1.00	9,164
Out-of-Workforce	0.10	0.30	0.00	0.00	0.00	0.00	1.00	9,164
Prior job description								
Craftsman	0.15	0.36	0.00	0.00	0.00	0.00	1.00	9,164
Executive	0.20	0.40	0.00	0.00	0.00	0.00	1.00	9,164
Intermediary prof.	0.10	0.30	0.00	0.00	0.00	0.00	1.00	9,164
Employee	0.25	0.43	0.00	0.00	0.00	1.00	1.00	9,164
Worker	0.21	0.41	0.00	0.00	0.00	0.00	1.00	9,164

Table 2: Comparison between Homeowners and Renters in the Intensive-Margin Sample

	Renters	Owners	T-Test
Panel A: Firm characteristics (1999 book values, in thousand Euros)			
Log(Asset)	3.78	3.55	7.17***
Log(Sales)	4.41	4.06	10.92***
Log(Debt)	3.51	3.10	12.05***
Log(1+# Employees)	0.69	0.42	15.08***
Log(Value Added)	4.00	3.69	10.02***
Log(Total Wage)	2.75	2.26	13.37***
Panel B: Entrepreneur characteristics			
Sole Proprietor	0.38	0.59	19.37***
Business at Home	0.26	0.77	50.77***
Age	36.82	39.17	11.02***
Entr. background	0.72	0.70	2.19**
Gender (Male==1)	0.76	0.81	5.38***
Serial Ent.	0.28	0.22	5.52***
Education			
No Diploma	0.17	0.21	3.91***
Technical training	0.38	0.47	8.29***
High School Diploma	0.20	0.15	5.81***
College Diploma	0.25	0.18	7.92***
Prior occupation			
Employed	0.53	0.54	.26
Unemployed	0.36	0.37	.87
Out-of-Workforce	0.11	0.09	1.83*
Previous Job Description			
Craftsman	0.16	0.14	2.16**
Executive	0.21	0.18	3.28***
Intermediary prof.	0.10	0.11	1.4
Employee	0.27	0.21	5.73***
Worker	0.17	0.30	13.71***

Table 3: Summary Statistics for the Extensive-Margin Analysis.
This table presents summary statistics for the sample we use in our analysis of the effect of real estate capital gains on the decision to start up a company. The sample period is 1990-2002. Panel A describes house price growth from year t-6 to year t-1 across the 89 French regions used in the analysis. Panel B describes personal characteristics of the individuals surveyed in the Labor Force Survey: a dummy equal to 1 if the individual starts a business, a dummy for homeownership, log of wage in the year previous to the decision to start a business (or the log of unemployment benefits if eligible), dummy if the individual is unemployed, age, gender (2 for male, 1 for female), a foreigner dummy, and education (dummies for College Degree, Some College, High School diploma, Technical Training).

	Mean	Std. Dev.	p(10)	p(25)	p(50)	p(75)	p(90)	Obs.
Panel A: House price growth								
$p_{t-1}/p_{t-6} - 1$	0.14	0.20	-0.03	0.04	0.10	0.20	0.31	1,026
$\text{Unemp}_{t-1} - \text{Unemp}_{t-6}$	0.29	1.72	-2.00	-1.00	0.35	1.57	2.60	1,026
Panel B: Individual characteristics								
Entrepreneurship	0.01	0.12	0.00	0.00	0.00	0.00	0.00	73,390
Homeowner	0.58	0.49	0.00	0.00	1.00	1.00	1.00	73,390
log(wage)	8.74	1.77	8.41	8.77	9.02	9.32	9.68	73,390
Unemployed	0.07	0.25	0.00	0.00	0.00	0.00	0.00	73,390
Age	42.95	8.79	31.00	36.00	43.00	50.00	55.00	73,390
Gender	0.13	0.33	0.00	0.00	0.00	0.00	1.00	73,390
Foreigner	0.07	0.25	0.00	0.00	0.00	0.00	0.00	73,390
Education								
College Degree	0.08	0.28	0.00	0.00	0.00	0.00	0.00	73,390
Some College	0.08	0.26	0.00	0.00	0.00	0.00	0.00	73,390
High School	0.11	0.31	0.00	0.00	0.00	0.00	1.00	73,390
Technical	0.35	0.48	0.00	0.00	0.00	1.00	1.00	73,390
No Diploma	0.38	0.49	0.00	0.00	0.00	1.00	1.00	73,390
Panel C: Aggregate characteristics								
# Active households	142.03	121.21	38.13	58.67	98.92	190.52	283.14	1,118
#firms created/ #AH	0.39	0.22	0.20	0.25	0.33	0.51	0.66	1,118
#employ. created/ #AH	0.69	0.38	0.34	0.44	0.58	0.85	1.12	1,118
Fraction homeowners	58.21	7.12	49.84	55.48	58.51	63.03	66.66	1,118
Median Wage	5.79	0.58	5.20	5.45	5.75	6.00	6.50	1,118
Workforce composition								
Agriculture	0.08	0.05	0.02	0.04	0.08	0.10	0.15	1,118
Manufacturing	0.21	0.07	0.12	0.17	0.22	0.26	0.31	1,118
Construction	0.07	0.01	0.06	0.07	0.07	0.08	0.09	1,118
For Profit Services	0.36	0.06	0.29	0.32	0.34	0.38	0.45	1,118
Non Profit Services	0.28	0.03	0.24	0.25	0.28	0.30	0.31	1,118

Table 4: Comparison between Homeowners and Renters in the Extensive-Margin Sample

	Renters	**Owners**	**T-Test**
Entrepreneurship	0.013	0.015	2.66***
log(wage)	8.467	8.939	35.89***
Unemployed	0.102	0.038	35.29***
Age	40.079	45.049	78.78***
Gender	0.195	0.076	48.81***
Foreigner	0.107	0.036	39.05***
Education			
College Degree	0.072	0.091	9.21***
Some College	0.073	0.078	2.55**
High School	0.101	0.112	4.76***
Technical	0.326	0.365	11.13***
No Diploma	0.428	0.353	20.61***

Table 5: Real Estate Capital Gains before Creation and Entrepreneurial Outcomes

The table reports the coefficient of regressions of entrepreneurial outcomes – measured in 1999 (the first entire fiscal year after creation) – on the interaction of regional house price appreciation from 1992 to 1997 (Δp) and a dummy for individual home ownership (Owner). We control for characteristics of the business owner (occupation previous to becoming an entrepreneur, age, education, gender), legal form of the business (sole proprietorship or corporation), industry, whether the firm is located in the owner's home, whether the entrepreneur has an entrepreneurial background, a serial entrepreneur dummy as well as all interactions of these controls with Δp. The regressions also include département fixed effects, as well as region-by-industry fixed effects. The outcomes we consider are logarithm of 1 plus total assets (column (1)), sales (column (2)), number of employees (column (3)), total debt (column (4)), value added (column (5)), and total wage bill (column (6)). Standard errors are shown in parentheses and are clustered at the region-by-ownership level. The p-value reported in the table is for the Owner $\times\Delta$ p coefficient and is instead calculated using clustering at the region level (k=25) using Cameron et al. (2008)'s wild-cluster bootstrap. *, **, and *** mean statistically different from zero at 10%, 5% and 1% levels of significance.

	log(Assets) (1)	log(Sales) (2)	log(#Emp.) (3)	log(Debt) (4)	log(Value Added) (5)	log(Wage Bill) (6)
Owner $\times \Delta p$	1.1***	.81***	.34***	.89***	.65***	.77***
	(.2)	(.2)	(.11)	(.29)	(.21)	(.24)
Owner	.081***	-.13***	-.11***	-.032	-.14***	-.21***
	(.028)	(.027)	(.015)	(.029)	(.026)	(.031)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Controls $\times \Delta p$	Yes	Yes	Yes	Yes	Yes	Yes
Département FE	Yes	Yes	Yes	Yes	Yes	Yes
Region $\times$ Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
p-value (CGM)	.01	.002	.036	.046	.01	.022
Observations	9,163	9,163	9,163	9,163	9,163	9,163
Adj. R^2	0.28	0.19	0.29	0.32	0.22	0.30

Table 6: Real Estate Capital Gains before Creation and Entrepreneurial Outcomes: Robustness to Controls
The table reports the coefficient of regressions of entrepreneurial outcomes – measured in 1999 (the first entire fiscal year after creation) – on the interaction of regional house price appreciation from 1992 to 1997 (Δp) and a dummy for individual home ownership (Owner). Column 1 to 4 (resp. 5 to 8) use log of one plus total assets (resp. sales) as a dependent variable. Column 1 and 5 simply have département fixed-effects as well as region-industry fixed effects. Column 2 and 6 controls for industry (36 industries) and legal status of the firm (sole proprietorship vs. corporation), as well as their interaction with house price growth. Column 3 and 7 add controls and interaction terms for education, previous job description as well as previous employment status. Column 4 and 8 add controls and interaction terms for age, gender, entrepreneurial background and past entrepreneurial activity. Standard errors are shown in parentheses and are clustered at the region-by-ownership level. The p-value reported in the table is for the Owner $\times\Delta$ p coefficient and is instead calculated using clustering at the region level (k=25) using Cameron et al. (2008)'s wild-cluster bootstrap. *, **, and *** mean statistically different from zero at 10%, 5% and 1% levels of significance.

	log(Assets)				log(Sales)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Owner $\times \Delta p$	.88***	1***	.96***	1.1***	.74***	.85***	.73***	.81***
	(.21)	(.14)	(.16)	(.2)	(.16)	(.15)	(.15)	(.2)
Owner	-.24***	-.051**	-.073***	.081***	-.39***	-.25***	-.27***	-.13***
	(.029)	(.022)	(.024)	(.028)	(.022)	(.021)	(.022)	(.027)
Controls	None	+ Indust. &	+ educ., job	+ age, sex	None	+ Indust. &	+ educ., job	+ age, sex
Controls $\times \Delta p$	None	legal status	descr.& empl.	entr. act.	None	legal status	descr.& empl.	entr. act.
Département FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region $\times$ Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
p-value (CGM)	.038	.018	.004	.004	.002	.012	.008	.004
Observations	9,163	9,163	9,163	9,163	9,163	9,163	9,163	9,163
Adj. R^2	0.05	0.24	0.27	0.28	0.05	0.17	0.18	0.19

Table 7: Real Estate Capital Gains before Creation and Entrepreneurial Outcomes: Aggregation
For each region, we regress entrepreneurial outcomes – measured in 1999 (the first entire fiscal year after creation) — on an home ownership dummy (Owner) and the following control variables: characteristics of the business owner (occupation previous to becoming an entrepreneur, age, education, gender), legal form of the business (sole proprietorship or corporation), industry, whether the firm is located in the owner's home, whether the entrepreneur has an entrepreneurial background and a serial entrepreneur dummy. We also include département fixed effect. For each region, we retrieve the coefficient on the home ownership dummy and then regress it on the regional house price appreciation from 1992 to 1997 (Δp) (Panel A), regional GDP growth and département-level unemployment changes from 1992 to 1997 (Panel B). Bootstrapped standard errors are shown in parentheses. *, **, and *** mean statistically different from zero at 10%, 5% and 1% levels of significance.

	log(Assets)	log(Sales)	log(#Empl.)	log(Debt)	log(Value Added)	log(Wage Bill)
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Only house price growth						
Δp	1.5***	.84***	.46***	1.5***	.88***	1.2***
	(.27)	(.27)	(.16)	(.37)	(.31)	(.33)
Observations	25	25	25	25	25	25
R^2	0.55	0.30	0.26	0.40	0.26	0.36
Panel B: House price growth, GDP growth and unemployment changes						
Δp	1.3***	.76***	.43**	1.3***	.73**	1.1***
	(.24)	(.26)	(.17)	(.32)	(.26)	(.31)
ΔUnemp.	-.11**	-.08*	-.034	-.16***	-.13***	-.093*
	(.04)	(.042)	(.027)	(.052)	(.043)	(.051)
ΔGDP	-2.4*	-2.3*	-1	-3.9**	-3.1**	-3.1*
	(1.2)	(1.3)	(.82)	(1.6)	(1.3)	(1.5)
Observations	25	25	25	25	25	25
R2	0.70	0.45	0.34	0.63	0.55	0.50

Table 8: Real Estate Capital Gains and Entrepreneurial Outcomes: Robustness to local GDP and unemployment
The table reports the coefficient of regressions of entrepreneurial outcomes – measured in 1999 (the first entire fiscal year after creation) – on the interaction of regional house price appreciation from 1992 to 1997 (Δp) and a dummy for individual home ownership (Owner). We control for characteristics of the business owner (occupation previous to becoming an entrepreneur, age, education, gender), legal form of the business (sole proprietorship or corporation), industry, whether the firm is located in the owner's home, whether the entrepreneur has an entrepreneurial background, a serial entrepreneur dummy as well as all interactions of these controls with Δp. We also control for the region-level GDP growth from 1992 to 1997 interacted with the home ownership dummy and the département-level change in unemployment from 1992 to 1997, also interacted with the home ownership dummy. The regressions include département fixed effects, as well as region-by-industry fixed effects. The outcomes we consider are logarithm of 1 plus total assets (column (1)), sales (column (2)), number of employees (column (3)), total debt (column (4)), value added (column (5)), and total wage bill (column (6)). Standard errors are shown in parentheses and are clustered at the region-by-ownership level. The p-value reported in the table is for the Owner $\times\Delta$ p coefficient and is instead calculated using clustering at the region level (k=25) using Cameron et al. (2008)'s wild-cluster bootstrap. *, **, and *** mean statistically different from zero at 10%, 5% and 1% levels of significance.

	log(Assets) (1)	log(Sales) (2)	log(#Empl.) (3)	log(Debt) (4)	log(Value Added) (5)	log(Wage Bill) (6)
Owner $\times \Delta p$	1***	.76***	.33***	.89***	.61***	.78***
	(.21)	(.21)	(.11)	(.3)	(.22)	(.23)
Owner	.35***	.11	.028	.17	.21	.19
	(.11)	(.19)	(.074)	(.11)	(.16)	(.15)
Owner $\times$ ΔGDP	-1.3*	-1.2	-.83**	-1.3*	-1.9**	-2.6***
	(.64)	(.94)	(.39)	(.66)	(.82)	(.78)
Owner $\times$ ΔUnemp	-.062**	-.045	-.014	-.016	-.049	-.03
	(.026)	(.037)	(.016)	(.029)	(.032)	(.036)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Controls $\times \Delta p$	Yes	Yes	Yes	Yes	Yes	Yes
Département FE	Yes	Yes	Yes	Yes	Yes	Yes
Region $\times$ Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
p-value (CGM)	.032	.002	.064	.066	.012	.022
Observations	9,163	9,163	9,163	9,163	9,163	9,163
Adj. R^2	0.28	0.19	0.29	0.32	0.22	0.30

Table 9: Real Estate Capital Gains and Entrepreneurial Outcomes: Controlling for future house price growth.
The table reports the coefficient of regressions of entrepreneurial outcomes – measured in 1999 (the first entire fiscal year after creation) – on the interaction of regional house price appreciation from 1992 to 1997 (Δp) and a dummy for individual home ownership (Owner). We control for characteristics of the business owner (occupation previous to becoming an entrepreneur, age, education, gender), legal form of the business (sole proprietorship or corporation), industry, whether the firm is located in the owner's home, whether the entrepreneur has an entrepreneurial background, a serial entrepreneur dummy as well as all interactions of these controls with Δp. The sample contains only firms started by entrepreneurs 40 and older. The regressions include département fixed effects, as well as region-by-industry fixed effects. The outcomes we consider are logarithm of 1 plus total assets (column (1)), sales (column (2)), number of employees (column (3)), total debt (column (4)), value added (column (5)), and total wage bill (column (6)). Standard errors are shown in parentheses and are clustered at the region-by-ownership level. The p-value reported in the table is for the Owner $\times\Delta$ p coefficient and is instead calculated using clustering at the region level (k=25) using Cameron et al. (2008)'s wild-cluster bootstrap. *, **, and *** mean statistically different from zero at 10%, 5% and 1% levels of significance.

	log(Assets) (1)	log(Sales) (2)	log(# Emp.) (3)	log(Debt) (4)	log(Value Added) (5)	log(Wage Bill) (6)
Owner $\times \Delta p^{92-97}$	1.2***	.83***	.33***	.99***	.59**	.66**
	(.19)	(.19)	(.12)	(.28)	(.22)	(.3)
Owner $\times \Delta p^{99-04}$	.15	.054	-.013	.19	-.12	-.22
	(.15)	(.14)	(.093)	(.19)	(.13)	(.17)
Owner	.028	-.15***	-.1**	-.1	-.09*	-.13*
	(.06)	(.054)	(.04)	(.075)	(.051)	(.07)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Controls $\times \Delta p$	Yes	Yes	Yes	Yes	Yes	Yes
Département FE	Yes	Yes	Yes	Yes	Yes	Yes
Region $\times$ Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
p-value (CGM)	.008	.002	.10	.058	.05	.17
Observations	9,163	9,163	9,163	9,163	9,163	9,163
Adj. R^2	0.28	0.19	0.29	0.32	0.21	0.30

Table 10: Real Estate Capital Gains and Entrepreneurial Outcomes: Excluding Paris and neighboring département. The table reports the coefficient of regressions of entrepreneurial outcomes – measured in 1999 (the first entire fiscal year after creation) – on the interaction of regional house price appreciation from 1992 to 1997 (Δp) and a dummy for individual home ownership (Owner). We control for characteristics of the business owner (occupation previous to becoming an entrepreneur, age, education, gender), legal form of the business (sole proprietorship or corporation), industry, whether the firm is located in the owner's home, whether the entrepreneur has an entrepreneurial background, a serial entrepreneur dummy as well as all interactions of these controls with Δp. Paris and the "petite couronne" (three départements around Paris) are excluded from the sample. The regressions include département fixed effects, as well as region-by-industry fixed effects. The outcomes we consider are logarithm of 1 plus total assets (column (1)), sales (column (2)), number of employees (column (3)), total debt (column (4)), value added (column (5)), and total wage bill (column (6)). Standard errors are shown in parentheses and are clustered at the region-by-ownership level. The p-value reported in the table is for the Owner $\times\Delta$ p coefficient and is instead calculated using clustering at the region level (k=21) using Cameron et al. (2008)'s wild-cluster bootstrap. *, **, and *** mean statistically different from zero at 10%, 5% and 1% levels of significance.

	log(Assets) (1)	log(Sales) (2)	log(#Emp.) (3)	log(Debt) (4)	log(Value Added) (5)	log(Wage Bill) (6)
Owner $\times \Delta p$	1.1***	.83***	.35***	.94***	.66***	.75**
	(.26)	(.23)	(.13)	(.3)	(.24)	(.3)
Owner	.083**	-.13***	-.11***	-.031	-.14***	-.21***
	(.033)	(.03)	(.017)	(.031)	(.028)	(.034)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Controls $\times \Delta p$	Yes	Yes	Yes	Yes	Yes	Yes
Département FE	Yes	Yes	Yes	Yes	Yes	Yes
Region $\times$ Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
p-value (CGM)	.06	.014	.092	.086	.054	.058
Observations	8,484	8,484	8,484	8,484	8,484	8,484
Adj. R^2	0.29	0.20	0.30	0.32	0.23	0.31

Table 11: Real Estate Capital Gains before Creation and long-run Outcomes
The table reports the coefficient of regressions of entrepreneurial outcomes – measured in year $t \in [2000, 2005]$ – on the interaction of regional house price appreciation from 1992 to 1997 (Δp) and a dummy for individual home ownership (Owner). We control for characteristics of the business owner (occupation previous to becoming an entrepreneur, age, education, gender), legal form of the business (sole proprietorship or corporation), industry, whether the firm is located in the owner's home, whether the entrepreneur has an entrepreneurial background, a serial entrepreneur dummy as well as all interactions of these controls with Δp. The regressions also include département fixed effects, as well as region-by-industry fixed effects. The outcomes we consider are logarithm of 1 plus total assets (column (1)), sales (column (2)), number of employees (column (3)), total debt (column (4)), value added (column (5)), and total wage bill (column (6)). To control for endogenous attrition, we assign a 0 value to the dependent variable for firms that exit the sample. Standard errors are shown in parentheses and are clustered at the region-by-ownership level. *, **, and *** mean statistically different from zero at 10%, 5% and 1% levels of significance.

	log(Assets)	log(Sales)	log(# Emp.)	log(Debt)	log(Val. Add.)	log(Wage)
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: 2000						
Owner × Δp	.93**	.82*	.27**	.62	.73*	.85**
	(.35)	(.45)	(.11)	(.37)	(.38)	(.32)
Panel B: 2001						
Owner × Δp	1**	.99*	.31***	.88**	.84*	1***
	(.41)	(.5)	(.11)	(.36)	(.45)	(.34)
Panel C: 2002						
Owner × Δp	.39	.22	.17	.28	.13	.57
	(.49)	(.55)	(.13)	(.42)	(.52)	(.36)
Panel D: 2003						
Owner × Δp	.74*	.66	.1	.69*	.64	.66*
	(.42)	(.51)	(.1)	(.37)	(.47)	(.33)
Panel D: 2004						
Owner × Δp	1.1**	1.1*	.2*	.81**	.85*	.99***
	(.43)	(.55)	(.11)	(.33)	(.45)	(.35)
Panel D: 2005						
Owner × Δp	1**	.95**	.26**	.75**	.75**	.83***
	(.41)	(.43)	(.12)	(.32)	(.35)	(.29)
Observations	9,163	9,163	9,163	9,163	9,163	9,163

Table 12: Real Estate Capital Gains before Creation and long-run Outcomes: Aggregation
For each region, we regress entrepreneurial outcomes – measured in year $t \in [2000, 2005]$ and assigned a value of 0 if the firm has exited the sample – on an home ownership dummy (Owner) and the following control variables: characteristics of the business owner (occupation previous to becoming an entrepreneur, age, education, gender), legal form of the business (sole proprietorship or corporation), industry, whether the firm is located in the owner's home, whether the entrepreneur has an entrepreneurial background and a serial entrepreneur dummy. We also include département fixed effect. For each region and each year, we retrieve the coefficient on the home ownership dummy and then regress it on the regional house price appreciation from 1992 to 1997 (Δp). Bootstrapped tandard errors are shown in parentheses. *, **, and *** mean statistically different from zero at 10%, 5% and 1% levels of significance.

	log(Assets)	log(Sales)	log(Debt)	log(#Empl.)	log(Val. Add.)	log(Wage)
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: 2000						
Price change	1.2**	.94	.45**	1.2**	.9	1.4***
	(.52)	(.59)	(.2)	(.55)	(.58)	(.46)
Panel B: 2001						
Price change	2**	2*	.81**	1.8**	1.9*	2**
	(.87)	(1)	(.37)	(.77)	(1)	(.79)
Panel C: 2002						
Price change	.51	.63	.3	.58	.51	1.1
	(.84)	(1)	(.38)	(.83)	(1)	(.72)
Panel D: 2003						
Price change	1.5	1.5	.46	1.5*	1.4	1.4*
	(.86)	(.95)	(.34)	(.83)	(.93)	(.7)
Panel D: 2004						
Price change	2**	2.1**	.66*	1.8**	1.8*	1.9**
	(.83)	(.94)	(.36)	(.75)	(.89)	(.72)
Panel D: 2005						
Price change	1.8**	1.9**	.68**	1.7**	1.6**	1.6**
	(.71)	(.81)	(.33)	(.72)	(.73)	(.61)
Observations	25	25	25	25	25	25

Table 13: Real Estate Capital Gains before Creation and long-run Outcomes: Robustness
The table reports the coefficient of regressions of entrepreneurial outcomes – measured in year $t \in [2000, 2005]$ – on the interaction of regional house price appreciation from 1992 to 1997 (Δp) and a dummy for individual home ownership (Owner). We control for characteristics of the business owner (occupation previous to becoming an entrepreneur, age, education, gender), legal form of the business (sole proprietorship or corporation), industry, whether the firm is located in the owner's home, whether the entrepreneur has an entrepreneurial background, a serial entrepreneur dummy as well as all interactions of these controls with Δp. The regressions also include département fixed effects, as well as region-by-industry fixed effects. The outcomes we consider are logarithm of 1 plus total assets (column (1)), sales (column (2)), number of employees (column (3)), total debt (column (4)), value added (column (5)), and total wage bill (column (6)). Standard errors are shown in parentheses and are clustered at the region-by-ownership level. *, **, and *** mean statistically different from zero at 10%, 5% and 1% levels of significance.

	Log(Assets)					
	2000	2001	2002	2003	2004	2005
Panel A: Controlling for realized house price growth						
Owner $\times \Delta p^{92-97}$	.93**	1.1**	.34	.66	1**	.82*
	(.36)	(.44)	(.42)	(.41)	(.38)	(.46)
Owner $\times \Delta p^{99-t}$	-.0012	.47	-.41	-.24	-.28	-.34
	(.89)	(.96)	(.59)	(.51)	(.34)	(.27)
Observations	9,163	9,163	9,163	9,163	9,163	9,163
Panel B: Conditional on survival						
Owner $\times \Delta p$	.5**	.59***	.42	.54*	.65***	.59*
	(.21)	(.18)	(.26)	(.27)	(.19)	(.3)
Observations	8,476	7,142	6,895	6,328	6,104	5,603

Table 14: Real Estate Capital Gains before Creation and Survival

This table reports coefficient estimates of a linear probability model of the failure hazard in year 1998+t, fh(t), defined as failure probability in year 1998+ t conditional on survival until year 1998+ $t-1$, as a function of the interaction of house price growth from 1992 to 1997 (Δp) and a dummy for individual home ownership (Owner). Columns (7) and (8) use the probability of failure before 2005 as a dependent variable. We control for characteristics of the business owner (occupation previous to becoming an entrepreneur, age, education, gender), legal form of the business (sole proprietorship or corporation), industry, whether the firm is located in the owner's home, whether the entrepreneur has an entrepreneurial background, a serial entrepreneur dummy as well as all interactions of these controls with Δp. The regressions also include département fixed effects, as well as region-by-industry fixed effects. Standard errors are shown in parentheses and are clustered at the region-by-ownership level. The p-value reported in the table is for the Owner $\times\Delta$ p coefficient and is instead calculated using clustering at the region level (k=25) using Cameron et al. (2008)'s wild-cluster bootstrap. *, **, and *** mean statistically different from zero at 10%, 5% and 1% levels of significance.

	fh(1)	fh(2)	fh(3)	fh(4)	fh(5)	fh(6)	$\mathbb{P}[year(failure) < 2005]$	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Owner $\times\ \Delta p$	-.097	.0088	.054	-.019	-.13**	-.032	-.13	-.17*
	(.09)	(.052)	(.089)	(.068)	(.057)	(.062)	(.11)	(.086)
Owner	-.0076	-.059***	-.022**	-.022***	-.021***	-.018*	-.097***	-.031
	(.009)	(.0075)	(.0085)	(.0074)	(.0066)	(.0092)	(.013)	(.058)
Owner $\times\ \Delta$GDP								-.15
								(.36)
Owner $\times\ \Delta$Unemp								-.029***
								(.01)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls $\times\ \Delta p$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Département FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region $\times$ Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
p-value (CGM)	.238	.45	.37	.39	0	.3	.21	.12
Observations	9,163	8,292	7,071	6,627	6,122	5,724	9,163	9,163
Adj. R^2	0.02	0.03	0.02	0.01	-0.00	0.01	0.06	0.06

Table 15: Real Estate Capital Gains before Creation and Probability to Start a Business
The table reports the estimates of a linear probability model regressing the decision to start-up a company on the interaction of local house price appreciation in the five years prior to the decision (Δp) and a dummy for individual home ownership (Owner). All regressions include département fixed effects, as well as region-by-year fixed effects. Column (1) has no additional control. Column (2) adds controls for education (four dummies), as well as their interaction with Δp. Column (3) adds controls and interaction terms for previous year salary (or UI benefit if eligible) and previous year employment status. Column (4) adds controls and interaction terms for age. Column (5) adds controls and interaction terms for gender and nationality. Column (6) adds controls and interaction terms for current industry. Column (7) adds controls and interaction terms for the respondent's father's job description. Column (8) additionally controls for change in unemployment rate in the département from year t-6 to year t-1, as well as its interaction with the ownership dummy. Standard errors are shown in parentheses and are clustered at the region-by-ownership level. The p-value (CGM) reported in the table is for the Owner $\times\Delta$ p coefficient and is instead calculated using clustering at the region level (k=25) using Cameron et al. (2008)'s wild-cluster bootstrap. The T-test p-value corresponds to the T-test for the average coefficient of region-by-region estimation of the model ((Muller and Ibragimov, 2010)). *, **, and *** mean statistically different from zero at 10%, 5% and 1% levels of significance.

	Entrepreneurship Dummy							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Owner $\times \Delta p$	.014***	.014***	.014***	.011***	.011***	.01***	.0099***	.0094***
	(.0022)	(.0023)	(.0023)	(.0027)	(.0026)	(.0025)	(.0026)	(.0026)
Owner	.00091	.0003	.0053***	.0054***	.0036***	.0025***	.0022**	.0025***
	(.00078)	(.00075)	(.00085)	(.00091)	(.00086)	(.00085)	(.00088)	(.00092)
Owner $\times \Delta$unemp								-.0006**
								(.00029)
ΔUnemp								.0015
								(.0014)
Controls	None	Educ.	Wage & Emp.	Age	Gender & national.	fathers' job descr.	Industry	All
Controls$\times\Delta p$								
Département FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region $\times$ Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
p-value (CGM)	.006	.018	.018	.016	.026	.036	.042	.042
T-test p-value	.0025	.0064	.0061	.014	.023	.013	.029	.0052
Observations	73,390	73,390	73,390	73,390	73,390	73,390	73,390	73,390
Adj. R^2	0.00	0.00	0.05	0.05	0.05	0.07	0.07	0.07

Table 16: House Price Appreciation before Creation and Entry into Entrepreneurship
The table reports the estimates of regressions of the decision to start up a company on the local house price appreciation in the five years prior to the decision (Δp). All regressions are linear probability models and include département fixed effects and year fixed effects. Column (1) has no additional control. Column (2) adds controls for education (four dummies). Column (3) adds controls for previous year salary (or UI benefit if eligible) and previous year employment status. Column (4) controls for age. Column (5) controls for gender and nationality. Column (6) controls for current industry. Column (7) adds controls and interaction terms for the respondent's father's job description. Column (8) additionally controls for change in unemployment rate in the département from year t-6 to year t-1. Standard errors are shown in parentheses and are clustered at the region-by-ownership level. *, **, and *** mean statistically different from zero at 10%, 5% and 1% levels of significance.

	Entrepreneurship Dummy							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Δ_p	-.005*	-.0047	-.0033	-.0034	-.0035	-.0029	-.0027	-.0027
	(.003)	(.003)	(.0026)	(.0026)	(.0026)	(.003)	(.0031)	(.003)
College		.014***	.024***	.024***	.024***	.026***	.021***	.021***
		(.0023)	(.0026)	(.0026)	(.0026)	(.0025)	(.0025)	(.0025)
Some College		.0049**	.011***	.012***	.013***	.014***	.011***	.011***
		(.002)	(.002)	(.002)	(.002)	(.0021)	(.002)	(.002)
High School		.0053***	.011***	.011***	.012***	.013***	.011***	.011***
		(.0014)	(.0015)	(.0016)	(.0016)	(.0016)	(.0016)	(.0016)
Technical Training		.00082	.0035***	.0041***	.0034***	.0035***	.0032***	.0032***
		(.00088)	(.00083)	(.00086)	(.00086)	(.00085)	(.00085)	(.00085)
Log(wage) or log(UI)			-.016***	-.016***	-.017***	-.016***	-.016***	-.016***
			(.0013)	(.0013)	(.0013)	(.0013)	(.0013)	(.0013)
Unemployed			-.039***	-.039***	-.038***	-.012*	-.012*	-.012*
			(.0055)	(.0055)	(.0055)	(.0063)	(.0063)	(.0063)
Age				.0002***	.00022***	.0003***	.00029***	.00029***
				(.000055)	(.000055)	(.000058)	(.00006)	(.00006)
Sex					-.017***	-.015***	-.016***	-.016***
					(.0012)	(.0011)	(.0011)	(.0011)
Foreign					-.00099	-.0026	-.0022	-.0022
					(.0023)	(.0024)	(.0025)	(.0025)
Département FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	None	Educ.	Wage & Emp.	Age	Gender & national.	fathers' job descr.	Industry	All
Observations	73,390	73,390	73,390	73,390	73,390	73,390	73,390	73,390
Adj. R^2	0.00	0.00	0.05	0.05	0.05	0.06	0.07	0.07

Table 17: Real Estate Capital Gains before Creation and Entrepreneurial Outcomes: Unemployment Split

The table reports the coefficient of regressions of entrepreneurial outcomes – measured in 1999 (the first entire fiscal year after creation) – on the interaction of regional house price appreciation from 1992 to 1997 (Δp) and a dummy for individual home ownership (Owner). We control for characteristics of the business owner (occupation previous to becoming an entrepreneur, age, education, gender), legal form of the business (sole proprietorship or corporation), industry, whether the firm is located in the owner's home, whether the entrepreneur has an entrepreneurial background, a serial entrepreneur dummy as well as all interactions of these controls with Δp. The regressions also include département fixed effects, as well as region-by-industry fixed effects. The outcomes we consider are logarithm of one plus total assets (column (1) and (2)), sales (column (3) and (4)) and total debt (column (5) and (6)). Column (1), (3) and (5) estimate the model on the sample of entrepreneurs who were previously unemployed. Column (2), (4) and (6) estimate the model on the sample of entrepreneurs who were previously employed. Standard errors are shown in parentheses and are clustered at the region-by-ownership level. The p-value reported in the table is for the Owner $\times\Delta$ p coefficient and is instead calculated using clustering at the region level (k=25) using Cameron et al. (2008)'s wild-cluster bootstrap. *, **, and *** mean statistically different from zero at 10%, 5% and 1% levels of significance.

	log(Assets)		log(Sales)		log(Debt)	
	(1)	(2)	(3)	(4)	(5)	(6)
	Unemp.	Emp.	Unemp.	Emp.	Unemp.	Emp.
Owner × Δp	1.6***	.63	1.1***	.68**	1.5***	.47
	(.43)	(.4)	(.28)	(.34)	(.4)	(.45)
Owner	.057	.13***	-.16***	-.092*	-.048	.022
	(.045)	(.048)	(.036)	(.053)	(.049)	(.047)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Controls × Δp	Yes	Yes	Yes	Yes	Yes	Yes
Département FE	Yes	Yes	Yes	Yes	Yes	Yes
Region × Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
p-value (CGM)	.05	.13	.02	.04	.06	.25
Observations	4,272	4,891	4,272	4,891	4,272	4,891
Adj. R^2	0.23	0.26	0.21	0.15	0.29	0.28

Table 18: Real Estate Capital Gains before Creation and Probability to Start a Business: Income Split
The table reports the estimates of a linear probability model regressing the decision to start-up a company on the interaction of local house price appreciation in the five years prior to the decision (Δp) and a dummy for individual home ownership (Owner). Column (1) and (2) have no additional control. Column (3) and (4) adds controls for education (four dummies), previous year employment status, age, gender, nationality, father's job description and current industry, as well as their interactions with house price growth in the region from year t-6 to year t-1. Column (5) and (6) additionally controls for change in unemployment rate in the département from year t-6 to year t-1, and its interaction with the home ownership dummy. Column (1), (3) and (5) (resp. (2), (4) and (6)) are run on the sample of individuals whose past-year income is below the median (resp. above the median). All regressions include département fixed effects, as well as region-by-year fixed effects. Standard errors are shown in parentheses and are clustered at the region-by-ownership level. The p-value (CGM) reported in the table is for the Owner $\times\Delta$ p coefficient and is instead calculated using clustering at the region level (k=25) using Cameron et al. (2008)'s wild-cluster bootstrap. *, **, and *** mean statistically different from zero at 10%, 5% and 1% levels of significance.

	Entrepreneurship Dummy					
	(1)	(2)	(3)	(4)	(5)	(6)
	Income	Income	Income	Income	Income	Income
	below median	above median	below median	above median	below median	above median
Owner $\times \Delta p$	.038***	.0069**	.023***	.0047*	.023***	.0042*
	(.0059)	(.0028)	(.0063)	(.0025)	(.0064)	(.0024)
Owner	.0041***	.0001	.0014	-.0007	.0016	-.00038
	(.0013)	(.00095)	(.0013)	(.001)	(.0013)	(.0011)
Owner $\times \Delta$unemp					-.00044	-.00053
					(.00049)	(.00043)
ΔUnemp					.00029	.0013
					(.0024)	(.0016)
Controls	None	Noe	All	All	All	All
Controls$\times\Delta p$	None	None	All	All	All	All
Département FE	Yes	Yes	Yes	Yes	Yes	Yes
Region $\times$ Year FE	Yes	Yes	Yes	Yes	Yes	Yes
p-value (CGM)	.004	.084	.016	.172	.012	.178
Observations	36,983	36,407	36,983	36,407	36,983	36,407
Adj. R^2	0.01	0.00	0.05	0.02	0.05	0.02

Table 19: House Price Growth, Ownership Rate, and Local Entrepreneurial Activity
The table reports the estimates of linear regressions of entrepreneurial activity at the region level on the interaction of local house price appreciation in the past five years (Δp) and the fraction of homeowners in the region (% Owner). Columns (1) and (3) are unweighted. Columns (2) and (4) are weighted by the number of active households. Columns (1) and (2) control for year and département fixed effects. Columns (3) and (4) add controls for industry composition, size, and median wage in the region, as well as interactions of these controls with Δp. Standard errors clustered by region are shown in parentheses. *, **, and *** mean statistically different from zero at 10%, 5%, and 1% levels of significance.

	Measure of Entrepreneurial Activity			
	(1)	(2)	(3)	(4)
Panel A: # New Firms per "Active" Household				
% owners 1990 $\times$ Δp	.0028***	.0032***	.004***	.0034***
	(.00053)	(.00026)	(.00089)	(.00038)
Δp	-.0016***	-.0017***	-.028**	-.028***
	(.00017)	(.000076)	(.01)	(.0066)
Panel B: # Jobs in New Firms per "Active" Household				
% owners 1990 $\times$ Δp	.0074***	.0072***	.018***	.015***
	(.0019)	(.00098)	(.0035)	(.0017)
Δp	-.0033***	-.0029***	-.098**	-.12***
	(.00073)	(.00038)	(.044)	(.031)
Region FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Controls	No	No	Yes	Yes
Controls $\times$ Δp	No	No	Yes	Yes
Observations	1,118	1,118	1,118	1,118
Adj. R^2	0.97	0.99	0.98	0.99