Preference Heterogeneity and its Impact on Entrepreneurship

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1 Introduction

Entrepreneurship is widely regarded as a pathway to innovation and economic growth, yet empirical evidence reveals a puzzling fact: many entrepreneurs choose to operate small businesses and work substantially fewer hours than wage earners. Using the 2019 Survey of Consumer Finances (SCF), I document three core patterns. First, entrepreneurial hours are far more dispersed than those of wage workers, with significant shares at both very low and very high weekly hours. Second, there is a strong positive relationship between hours worked and firm scale: entrepreneurs who devote more time to their businesses operate systematically larger firms, both in terms of sales and employment. Third, entrepreneurs supplying fewer hours tend to be asset poor, whereas those supplying longer hours accumulate much larger stocks of business assets. These patterns are robust, and as a check I replicate them in the 2007 Survey of Business Owners (SBO), with results reported in the Appendix.

Taken together, the evidence shows that entrepreneurial hours are not uniform, nor do they map neatly onto productivity differences or financial constraints. Instead, they are closely tied to business outcomes and asset accumulation, but in ways that standard models cannot explain. For example, a framework based solely on productivity heterogeneity would incorrectly predict that wealthy entrepreneurs disproportionately operate short-hour firms, whereas the data show the opposite: low-hour entrepreneurs are typically modest in their assets, while the most asset-rich businesses are led by those committing substantial time. Complementary evidence from the Panel Study of Entrepreneurial Dynamics (PSED) underscores the importance of non-pecuniary motives, with more than half of entrepreneurs citing flexibility or autonomy as primary reasons for starting their businesses. This suggests that preference heterogeneity—differences in how individuals value work versus non-work time—plays a central role in shaping entrepreneurial choices.

This paper asks a simple but fundamental question: to what extent can differences in individual preferences explain the wide variation in entrepreneurial hours, firm size, and asset accumulation? To answer this, I develop a structural model in which entrepreneurs choose not only whether to enter, but also how many hours to devote to their business. The model incorporates heterogeneity in both entrepreneurial productivity and leisure preferences. Calibrated to match the mean and dispersion of hours in the SCF, it successfully reproduces the key empirical relationships: the broad spread of entrepreneurial hours, the steep scaling of employment and sales with time input, and the asset distribution across hour groups. Importantly, these moments are not directly targeted in calibration, providing a meaningful validation of the model's structure. The main results show that preference heterogeneity is essential for reconciling the data. First, individuals with stronger preferences for non-work time operate smaller, asset-poor firms and work fewer hours, while

those with weaker such preferences run larger, asset-rich businesses with longer workweeks. Second, allowing preferences to vary generates both part-time and full-time entrepreneurs, thereby replicating the wide dispersion in labor supply. Third, the model matches the monotonic relationship between entrepreneurial hours and firm size, while also producing realistic variation in asset accumulation—something productivity-only frameworks fail to capture.

By structurally quantifying the role of preferences, the paper advances our understanding of entrepreneurship beyond explanations based purely on technology or financial frictions. Preference heterogeneity is not just descriptive but necessary: it explains why some entrepreneurs deliberately sustain small, low-asset operations while others commit heavily to building large, high-asset firms. This unified framework captures the diversity of entrepreneurial outcomes and provides a foundation for counterfactual experiments on preferences, borrowing constraints, and complementarities between entrepreneurial effort and hired labor.

Building on these findings, this paper makes four contributions. First, it documents new empirical evidence on the wide dispersion of entrepreneurial hours and their systematic link to business size and asset accumulation using the 2019 Survey of Consumer Finances. Second, it develops a structural model in which entrepreneurs endogenously choose hours, allowing individual preferences for leisure to interact with productivity. Third, it shows that preference heterogeneity is indispensable for reproducing observed patterns in hours, firm scale, and asset distribution. Finally, through counterfactual experiments, it demonstrates that while relaxing financial constraints has only modest effects, the complementarity between entrepreneurial hours and hired labor emerges as a critical driver of firm growth.

Related Literature   This paper contributes to three strands of the literature: (i) small-firm preferences and non-monetary motivations, (ii) occupational choice with heterogeneous agents, and (iii) firm dynamics and growth. Across these areas, it highlights individual preferences as a central, quantifiable determinant of entrepreneurial outcomes.

First, it builds on research documenting the role of non-pecuniary motives in entrepreneurship. Hurst and Pugsley (2011) show that many small business owners do not prioritize expansion, instead valuing autonomy and flexibility. In related work, Hurst and Pugsley (2015) formalize preference heterogeneity, though entrepreneurial labor supply is not modeled as an explicit choice. More recently, Sterk, Sedláček, and Pugsley (2021) emphasize ex-ante heterogeneity in shaping firm dynamics. This paper extends these insights by making entrepreneurial hours an endogenous decision and by showing—through targeted empirical moments on hours dispersion, scaling of firm size with hours, and the distribution of asset accumulation—that preference heterogeneity is necessary to match observed patterns.

Second, it contributes to the occupational choice literature with heterogeneous agents. Cagetti and De Nardi (2006, 2009) analyze how wealth and borrowing constraints affect entrepreneurship and long-run wealth inequality; Kitao (2008) studies tax policy and entrepreneurial investment; Bruggemann (2021) incorporates heterogeneous entrepreneurial productivity to study taxation and wealth distribution. These frameworks emphasize financial frictions or productivity but generally treat entrepreneurial effort as fixed or uniform. By integrating heterogeneity in leisure preferences directly into the labor-supply decision, this paper allows occupational selection, time allocation, and asset accumulation to be jointly determined, helping explain the wide variation in hours and the link between labor input and firm outcomes.

Finally, the paper relates to firm dynamics and growth. Classic models such as Jovanovic (1982) and Evans (1987) describe young and small firms as growing quickly before stabilizing, driven by learning or productivity accumulation, and Haltiwanger et al. (2016) document that young firms disproportionately

contribute to employment growth. Yet many firms remain small and stable despite being viable—an outcome standard models struggle to explain. This paper shows that such outcomes can arise naturally from preference heterogeneity: some entrepreneurs choose to maintain small, low-asset firms not because of frictions or shocks but due to differences in preferences. In doing so, it provides a structural explanation for why some firms deliberately remain small while others expand substantially.

In sum, the paper formally quantifies the role of preferences in shaping entrepreneurial behavior and demonstrates that heterogeneity in leisure preferences is a necessary force for understanding the joint distribution of hours, firm size, and assets. This perspective offers new insight into the behavioral foundations of entrepreneurship and provides a framework for counterfactual analysis of policies that affect both pecuniary and non-pecuniary returns to self-employment.

2 Data

This paper draws on two primary datasets. First, the 2019 Survey of Consumer Finances (SCF), conducted by the Federal Reserve Board, serves as the main source for cross-sectional data on entrepreneurs. The SCF provides detailed information on household demographics, wealth, income, and business ownership. Entrepreneurs are defined as respondents who own a privately held business, actively manage it, and employ at least one worker. The analysis further restricts the sample to cases where the business is the household's primary source of income, ensuring that reported hours reflect meaningful choices that directly affect business size and performance.

Second, the Panel Study of Entrepreneurial Dynamics (PSED), a longitudinal dataset tracking a cohort of nascent entrepreneurs identified during 2005–2006 through six annual interviews, is used to examine entrepreneurial motivations and preferences. The PSED offers rich data on entrepreneurs' personal characteristics, business strategies, and, crucially, self-reported motivations for starting and maintaining their businesses, including preferences for non-pecuniary benefits such as leisure and flexibility. These data enable validation of inferences on leisure preferences drawn from the SCF.

Both datasets are publicly available and nationally representative. The SCF provides a detailed cross-sectional snapshot of entrepreneurs and their businesses, while the PSED's longitudinal design captures individual dynamics in the entrepreneurial process. The two datasets are complementary: the SCF documents broad empirical patterns in entrepreneurial hours, firm size, and asset accumulation, while the PSED provides direct evidence on the role of preferences in shaping entrepreneurial choices.

To better understand how entrepreneurial choices vary across individuals, I begin by documenting key empirical patterns using the 2019 SCF. Three facts stand out:

1. Entrepreneurial hours are much more dispersed than those of wage workers.

2. Entrepreneurs who supply more hours tend to operate larger businesses.

3. Entrepreneurs who supply fewer hours are asset poor.

As a robustness check, I replicate these patterns using the 2007 Survey of Business Owners (SBO), with results reported in the Appendix.

Dispersion in Hours Worked. Figure 1 illustrates a stark contrast in the distribution of weekly hours worked by entrepreneurs versus wage workers. Hours in wage employment are highly standardized: more

than half of all wage workers report working exactly 40 hours per week, with relatively little variation around this norm. By contrast, entrepreneurs exhibit much greater dispersion in labor supply. While the most common group of entrepreneurs works between 20 and 40 hours weekly, a substantial share report working significantly more or less. Nearly 15 percent report fewer than 20 hours, and over 27 percent work more than 60 hours per week. On average, entrepreneurs work 44.3 hours per week, compared with 38.4 hours for wage workers. This wide spread highlights the flexible and individualized nature of entrepreneurial labor supply.
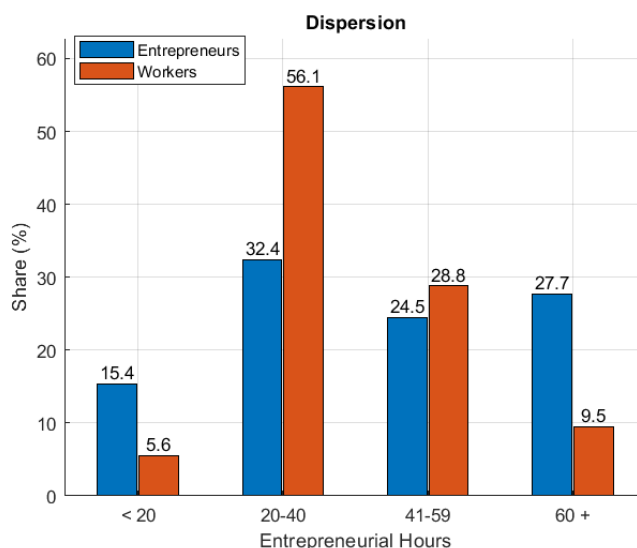

Figure 1: Distribution of Weekly Hours: Entrepreneurs vs. Workers

To better understand the sources of this dispersion, this paper examines variation across observable characteristics; gender, age and education
Gender: Gender provides some insight: Figure 2 shows that Gender differences explain only a limited share of the observed heterogeneity. Women are underrepresented in entrepreneurship overall, making up only a small fraction of each hours category. Their share dips further in the 41–59 hour range, where they account for less than 1 percent, but in all other categories they remain at roughly 2–3 percent of entrepreneurs. The distribution of hours is therefore shaped primarily by variation among men, with gender contributing little to the overall dispersion.
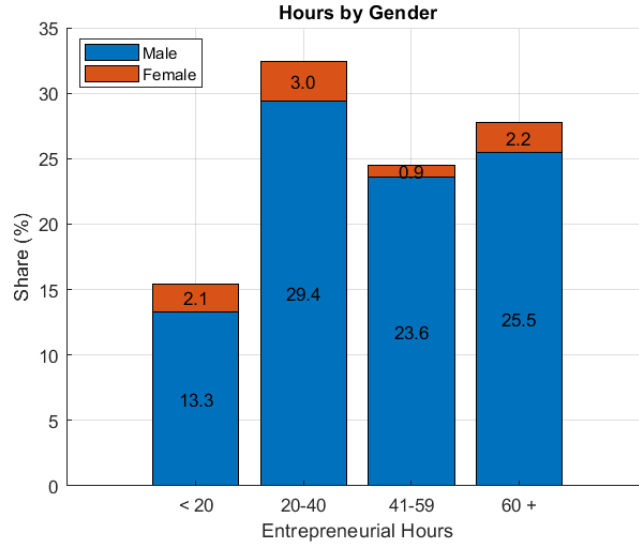
Figure 2: Entrepreneurial Hours Distribution by Gender

(a) All Entrepreneurs
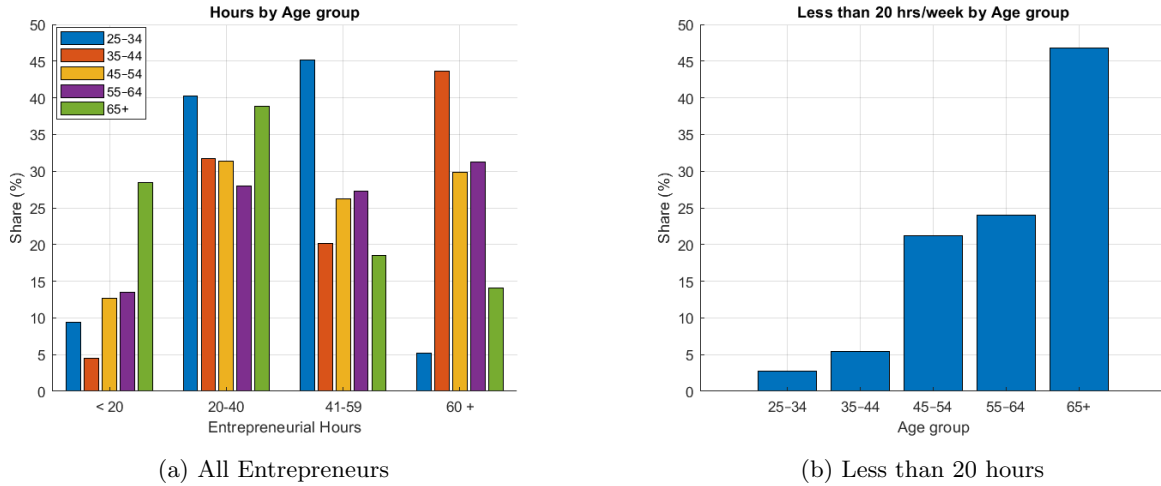

(b) Less than 20 hours

Figure 3: Distribution of Weekly Hours by Age

Variation by Age: To understand how hours vary across the life cycle, Figure 3a shows the distribution of entrepreneurial hours by age group. Younger entrepreneurs, especially those aged 25–34, are clustered around a standard full-time workweek, with most falling in the 41–59 hour range. By contrast, older entrepreneurs display a more polarized pattern: many reduce their involvement to part-time levels, while others remain highly engaged with very long hours. Figure 3b illustrates this polarization, showing that the likelihood of working fewer than 20 hours rises steadily with age, consistent with gradual withdrawal from active business management.

These patterns indicate that age and life-cycle stage matter for entrepreneurial labor supply. Still, they do not fully account for the wide dispersion observed in the data. Even within the same age group, some entrepreneurs commit only minimal time while others devote 60 or more hours a week. Thus, while age helps explain part of the variation, a substantial share of the heterogeneity in entrepreneurial hours remains

unexplained.

Variation by Education: Entrepreneurial hours also differ by educational attainment, and two features are especially notable. Figure 4a shows that entrepreneurs without a high school diploma are the most concentrated in very long work weeks, with the majority reporting 60 or more hours. At the other end of the distribution, even among those with a bachelor's degree or higher, around 15 percent work fewer than 20 hours per week. Figure 4b shows that more than half of all entrepreneurs in the under-20-hours category hold a bachelor's degree or above.

These contrasts indicate that education shifts weight toward opposite tails: lower education is associated with very long workweeks, while higher education is more visible among those reporting short workweeks. Yet within every education group, there are entrepreneurs working only a handful of hours and others exceeding 60, leaving much of the variation unexplained.
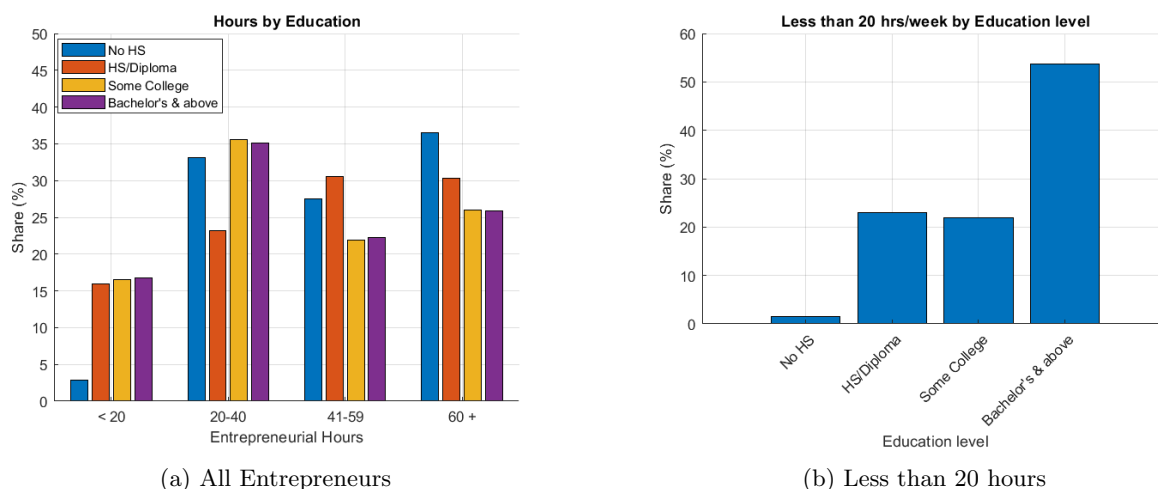

(a) All Entrepreneurs (b) Less than 20 hours

Figure 4: Distribution of Weekly Hours by Education Level

Entrepreneurial Hours and Business Size. Figure 21 shows a clear positive relationship between entrepreneurial hours and firm scale, measured by annual sales and number of employees. Firms run by short-hour entrepreneurs are systematically smaller, while those managed by long-hour entrepreneurs are much larger. Businesses led by entrepreneurs working fewer than 20 hours per week generate only about one-third of average sales and less than one-fifth of average employment. At the other extreme, entrepreneurs working 60 or more hours operate firms that reach roughly one-and-a-half times average sales and nearly twice average employment. The pattern is monotonic: as hours rise, so do firm outcomes, with the largest businesses concentrated among long-hour entrepreneurs.

This positive association is important for two reasons. First, it demonstrates that differences in hours worked are closely tied to differences in firm size. Second, the particularly strong relationship between entrepreneurial hours and employment suggests a complementarity between entrepreneurial labor supply and hired labor—an element that will be incorporated into the model.
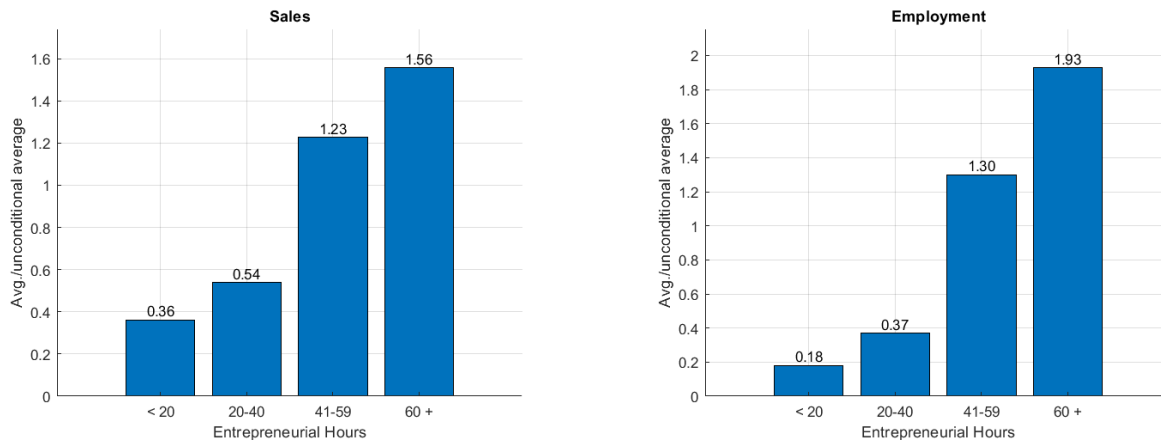
(a) Average firm sales relative to the mean   (b) Average firm employment relative to the mean

Figure 5: Firm size by entrepreneurial weekly hours

To further examine this relationship, Table 1 reports results from ordinary least squares (OLS) regressions of log employment size and log sales on entrepreneurial hours, controlling for age, gender, education, and industry fixed effects. The coefficient on hours is positive and highly significant across specifications. Quantitatively, an additional hour per week is associated with approximately 2.5 percent higher employment and 3.9 percent higher sales. These results confirm that the descriptive patterns are not merely compositional but hold after accounting for observable entrepreneur characteristics and sectoral differences. The regression also highlights systematic patterns along other dimensions: women entrepreneurs tend to operate smaller firms than men, while higher education—particularly a bachelor's degree or above—is strongly associated with larger businesses.

Entrepreneurial Hours and Assets: Figure 6 shows that the link between entrepreneurial hours and firm assets is positive, though less steep than for sales and employment. Firms run by entrepreneurs working fewer than 20 or 20–40 hours hold well below-average asset levels (asset poor). By contrast, firms operated by entrepreneurs working 41–59 or 60 or more hours hold above-average asset levels (asset-rich). The peak appears in the 41-59 hour range, though assets remain above the mean even among the longest-hour entrepreneurs. Overall, time spent in the business is associated with higher asset intensity, but not as strongly as with sales and employment.

Table 1: OLS Results: Log Employment Size vs. Log Sales

Independent Variables	Log Employment Size	Log Sales
Hours	**0.025***	**0.039***
	(0.0018)	(0.0024)
Age	0.049**	0.177***
	(0.0184)	(0.0250)
Age^2	-0.0003†	-0.0013***
	(0.0002)	(0.0002)
Female	-1.014***	-1.948***
	(0.143)	(0.194)
High School Diploma	0.218	0.359
	(0.166)	(0.225)
Some College	0.159	0.713***
	(0.169)	(0.229)
Bachelor's and Above	1.260***	2.270***
	(0.152)	(0.206)
Industry (FE = 2)	-0.219***	-0.475***
	(0.075)	(0.101)
Constant	-0.986†	5.796***
	(0.535)	(0.727)
Observations	4,906	4,906
R-squared	0.099	0.154

Note: Standard errors in parentheses. $^\dagger p < 0.10$, $*p < 0.05$, $**p < 0.01$, $***p < 0.001$
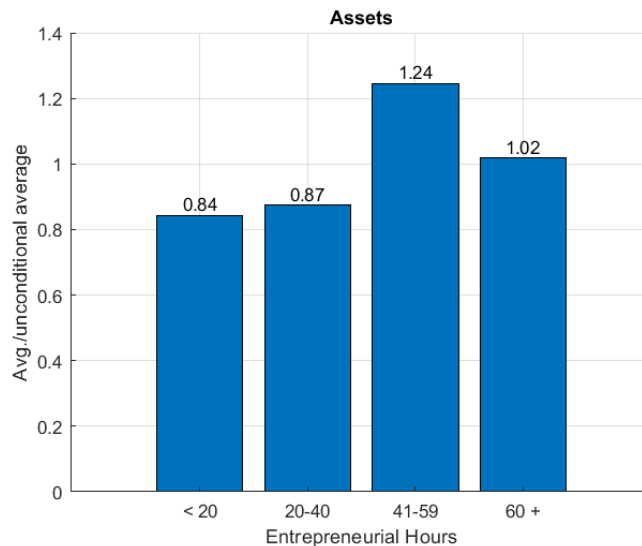

Figure 6: Average firm assets relative to the mean, by entrepreneur hours

3 Model

The preceding empirical analysis establishes a set of robust facts: entrepreneurs display wide heterogeneity in weekly hours worked, only partially explained by observable characteristics such as age, gender, or education. This dispersion correlates strongly with business outcomes such as firm scale—employment size, sales, and asset holdings—underscoring the importance of entrepreneurial hours in shaping entrepreneurial outcomes. Firms operated by short-hour entrepreneurs are smaller across all three dimensions, while those led by long-hour entrepreneurs are larger, with the relationship most pronounced for employment and sales and somewhat flatter for assets. To interpret these patterns and formalize the underlying mechanisms, this paper now turns to a theoretical framework that incorporates preference heterogeneity over labor supply within a stylized entrepreneurial setting.

3.1 General Equilibrium Model

The model builds on the foundational framework of the Bewley-Aiyagari-Huggett economy with heterogeneous agents. It parallels the approach of Cagetti and De Nardi (2006), incorporating occupational choice in a dynamic setting where agents vary in both preferences and entrepreneurial ability.

Overview: The model economy is composed of a continuum of risk-averse households, represented by a population measure of one. Each household is endowed with a time-invariant preference parameter λ and an idiosyncratic entrepreneurial ability ϵ, which evolves according to a Markov process. Every period, households decide whether to work as laborers or operate as entrepreneurs. Conditional on this occupational choice, they select consumption (c_t), savings (a_{t+1}), and the number of hours allocated to entrepreneurial activities (n_t) or hired labor (l_t). If a household chooses labor, they earn a wage rate (w_t). If they opt for entrepreneurship, their earnings are derived from profits, which is contingent on their idiosyncratic entrepreneurial ability.

Preferences: Lifetime utility is given by:

$$E_0 \sum_{t=0}^{\infty} \beta^t U(c_i, h_i) \tag{1}$$

$$U(c_i, h_i) = log c_i + \lambda_i log(1 - h_i) \tag{2}$$

where $h_{i,t} \in \{n_{i,t}, \bar{h}_{i,t}\}$. Here, h denotes total hours worked, whether as an entrepreneur n or as a worker $\bar{h}$. In the model, n can take any value in the interval $[0, 1]$ to reflect flexible work decisions for entrepreneurs, whereas $\bar{h}$ is fixed at $1/3$ for workers. The parameter λ captures the individual's preference, influencing the utility derived from work or non-work hours.

Production Technology: Building on the work of Quadrini (2000), Cagetti & DeNardi (2006), and Bruggemann (2021), the model includes two production sectors: a non-corporate entrepreneurial sector and a corporate sector.

Entrepreneurial Sector: The production technology for the entrepreneurial sector is given by:

$$F_i(k, \ell, n, \epsilon) = (Z\epsilon_i)^{1-\alpha\nu}(k_i^{\alpha}(n_i^{\rho} + \ell_i^{\rho})^{(1-\alpha)/\rho})^{\nu} \tag{3}$$

Z represents aggregate productivity, ϵ is the individual's entrepreneurial ability, k is the physical capital input, n denotes the entrepreneurial hours, ℓ stands for the labor input, and α signifies the capital's share of output. The parameter ν reflects the span of control, and ρ indicates the degree of complementarity between entrepreneurial hours and hired labor. The profit function for the entrepreneurial sector is:

$$\Pi_i(k, \ell, n, \epsilon) = F_i(k, \ell, n, \epsilon) - (r + \delta)k_i - w(\ell_i + f^o) \tag{4}$$

where δ is the depreciation rate of capital, and f_o is the fixed cost of operation measured in labor units. Corporate Sector: The corporate sector operates under perfect competition and follows a standard Cobb-Douglas production function:

$$Y_c = F(K_c, L_c) = ZK_c^\alpha L_c^{1-\alpha} \tag{5}$$

where K_c and L_c are the capital and labor inputs in the corporate sector, respectively.

Household's Problem: Let $V_i^H(\epsilon, a, d_{t-1}, \lambda)$ denote the value function for households at time t.

$$V_i^H(\epsilon_i, a_i, d_{-1,i}, \lambda_i) = \max \left\{ V_i^e(\epsilon_i, a_i, d_{-1,i}, \lambda_i), V_i^\omega(\epsilon_i, a_i, \lambda_i) \right\} \tag{6}$$

The state variables include the entrepreneurial ability ϵ, the stock of assets or savings a, the previous period's occupation d_{t-1} (worker or entrepreneur) and the preference for leisure parameter λ. The household's problem involves deciding between labor (ω) and entrepreneurship (e).

Entrepreneur's Problem: Entrepreneurs maximize their lifetime utility by choosing their consumption sequence (c_t), entrepreneurial work hours (n_t), and savings (a_{t+1}), subject to their budget constraint and feasibility conditions. The value function for entrepreneurs is denoted by V_t^e

$$V_i^e(\epsilon_i, a_i, d_{-1,i}, \lambda_i) =$$
$$\max_{c, a', n, k, \ell} \left\{ \log c_i + \lambda_i \log(1 - n_i) + \beta \chi E_{\epsilon'|\epsilon} \left[V^H(\epsilon_i', a_i', d_{-1,i} = e, \lambda_i) \right] \right\} \tag{7}$$

such that

$$c_i + a_i' + I_{(d_{t-1}=\omega)} w f^e \leq (1 + r)a_i + \Pi_i(k, \ell, n, \epsilon) \tag{8}$$

$$a_i' \geq 0 \tag{9}$$

$$c_i \geq 0 \tag{10}$$

$$\ell_i \geq 0 \tag{11}$$

$$n_i \in [0, 1] \tag{12}$$

The discount factor $\beta \in (0, 1)$ and the survival probability χ are crucial parameters, with individuals facing a probability $1 - \chi$ of dying in the subsequent period, at which point they are replaced by their offspring. Entrepreneurs transitioning from worker status incur a fixed cost of entry, f_e, measured in labor units.

Worker's Problem: Workers decide on their consumption, savings for the next period, and labor supply to maximize their lifetime utility. They earn a wage rate w and face the occupational choice again in the next period, conditional on surviving.

$$V_i^\omega(\epsilon_i, a_i, \lambda_i) =$$
$$\max_{c, a', n, k, \ell} \left\{ \log c_i + \lambda_i \log(1 - n_i) + \beta \chi E_{\epsilon'|\epsilon} \left[V^H(\epsilon_i', a_i', d_{-1,i} = e, \lambda_i) \right] \right\} \tag{13}$$

such that

$$c_i + a'_i \leq (1+r)a_i + wn_\omega \tag{14}$$

$$a'_i \geq 0 \tag{15}$$

$$c_i \geq 0 \tag{16}$$

Stationary Equilibrium: Let $s = (\epsilon, a, d_{t-1}, \lambda) \in S$ be the state vector. An equilibrium is defined by a sequence of prices $\{r,w\}$, the policy functions $d_o(s), c(s)$, $a'(s), n(s), l(s), k(s)$ and the distribution of households over the state variables $s : \omega(s)$, such that:

- The policy functions $d_o(s), c(s), a'(s), n(s), l(s), k(s)$ solve the household's problem given in 12

- The marginal products of capital and labor equal the rental rate r and wage rate w, respectively:

$$w = (1-\alpha)Z(\frac{K_c}{L_c})^\alpha \tag{17}$$

$$r = \alpha Z(\frac{K_c}{L_c})^{\alpha-1} - \delta \tag{18}$$

- Capital and labor markets clear

$$\int_\omega n_\omega = L_c + \int_e l(s) \tag{19}$$

$$\int_{\omega,e} a(s) = K_c + \int_e k(s) \tag{20}$$

- The stationary distribution of households satisfies:

$$\omega = \Omega(\omega) \tag{21}$$

3.2 Calibration

The model is calibrated to match key moments from the U.S. economy, focusing on the characteristics and behaviors of entrepreneurs. The period length is annual. Some parameters are taken directly from the macroeconomic literature, while others are internally calibrated to match empirical moments from the data. Table 2 summarizes externally calibrated parameters, while Table 3 presents those set internally.

Parameter	Source	Value
Aggregate Productivity (Z)	Normalization	1
Labor hour unit ($\bar{h}$)	Fixed	0.33
Capital share in Corporate Sector (α_c)	Gollin (2002)	0.33
Span of Control Parameter(ν)	Khan and Thomas (2008, 2013)	0.8363
Capital Constraint ζ	Brüggemann (2021)	1.50
Probability of being alive in t+1 (χ)	Average life span	45

Table 2: External Calibration

Parameter	Value	Target	Data	Model
Discount factor (β)	0.989	Capital-output	2.650	2.698
Fixed Cost of Entry (f^e)	0.002	Entry rate	0.023	0.024
Preference for Leisure (μ_λ)	0.111	Average Ent. hours	0.380	0.377
Preference for Leisure (σ_λ)	0.098	Std. dev. of Ent. hours	0.116	0.202
Entrepreneurial Ability (μ_ϵ)	0.342	Share of entrepreneurs	0.060	0.062
Entrepreneurial Ability (σ_ϵ)	0.017	Std. dev. of gross sales	0.402	0.460
Ent. labor hours complementarity (ρ)	-2.2	corr avg. n and avg h normalized	0.896	0.994

Table 3: Internal Calibration

Preferences. The discount factor is set to $\beta = 0.989$, calibrated to match the aggregate capital–output ratio. Worker hours are fixed at $\bar{h} = 1/3$, corresponding to roughly 40 hours weekly, while entrepreneurial hours are endogenously chosen. The preference parameter λ, which governs utility from non-work time, is heterogeneous across individuals. Its distributional parameters $(\mu_\lambda, \sigma_\lambda)$ are chosen so that the mean and standard deviation of entrepreneurial hours in the model replicate those observed in the SCF. This ensures that the model captures both the average level and the dispersion of entrepreneurial labor supply.

Technology. Aggregate productivity is normalized to $Z = 1$. The capital share of income is $\alpha_c = 0.33$ (Gollin, 2002). The span-of-control parameter $\nu = 0.8363$ (Khan and Thomas, 2008, 2013) governs decreasing returns to scale in entrepreneurship and the depreciation rate is $\delta = 0.0153$, a value that is commonly referenced in the literature to reflect the typical annual loss of capital value due to depreciation. The elasticity of substitution parameter $\rho = -2.2$ implies strong complementarity between entrepreneurial time and hired labor, consistent with evidence that owner involvement enhances worker productivity.

Entrepreneurial Heterogeneity. Entrepreneurial ability ϵ is distributed according to a log-normal process. Its mean and standard deviation are internally calibrated to match the share of entrepreneurs in the economy as well as the dispersion of gross sales across firms. This ensures that heterogeneity in productivity directly maps into the observed cross-sectional variation in firm revenues.

Entry Costs. Switching into entrepreneurship requires paying a fixed entry cost $f^e = 0.002$, calibrated to match the observed entry rate of 2.3 percent.

Financial Constraint. Entrepreneurs face a collateral constraint limiting external capital to a multiple $\zeta = 1.5$ of their asset holdings, following Brüggemann (2021). This parameter disciplines the scale of borrowing and helps reproduce the joint distribution of assets and firm size.

Demographics. Each household survives into the next period with probability $\chi = 0.975$, implying an expected working life of about 45 years. Upon death, agents are replaced by descendants who inherit assets but draw new preference and productivity types, ensuring persistent heterogeneity in a stationary equilibrium.

The internal calibration jointly targets the capital–output ratio, entry rate, mean and dispersion of entrepreneurial hours, share of entrepreneurs, sales dispersion, and the correlation between average employment and average entrepreneurial hours. As shown in Table 3, the model reproduces these moments very closely: the capital–output ratio is matched almost exactly (2.65 in the data versus 2.70 in the model), the entry rate aligns at 2.3 percent (2.4 percent in the model), and entrepreneurial hours and their dispersion are tightly replicated. Similarly, the model matches both the share of entrepreneurs in the economy and the

dispersion of sales across firms. Even the correlation between employment and hours is nearly one-for-one. Together, these results provide a disciplined and credible foundation for the counterfactual analysis that follows.

4 Results

This section evaluates the model's ability to replicate core empirical regularities in entrepreneurial behavior along four dimensions: (i) the distribution of entrepreneurial hours, (ii) average employment, (iii) average firm sales, and (iv) assets. Importantly, these moments are not directly targeted in the calibration, so the comparison provides a meaningful out-of-sample validation of the model.

4.1 Distribution of Entrepreneurial Hours

Figure 7 compares the empirical and model-generated distributions of weekly entrepreneurial hours. The model reproduces the high dispersion observed in the data, with large shares of entrepreneurs working moderate hours (20–40 and 41–59) or very long hours (60+), and a smaller but visible group working fewer than 20 hours. The peak in the 20–40 hour range is closely matched, while the model slightly underpredicts the share of entrepreneurs in the 41–59 hour group and modestly overpredicts those working 60 or more. Despite these deviations, the overall spread of hours—including the presence of both part-time and intensive entrepreneurs—is well captured, underscoring the model's ability to replicate observed patterns even though these moments were not directly targeted in the calibration.
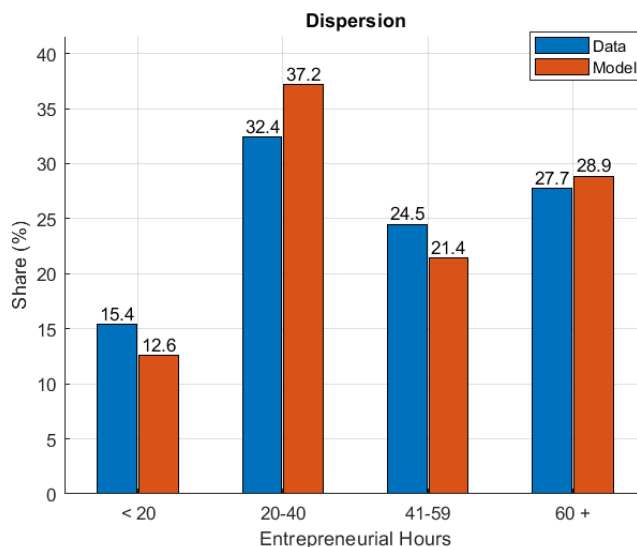

Figure 7: Entrepreneur Composition by Hours Bin

4.2 Employment Across Hours

As shown in Figure 8, the model reproduces the strong positive gradient between entrepreneurial hours and employment. Both in the data and in the model, firms run by entrepreneurs working fewer than 20 hours employ very few workers, while employment rises steadily across the distribution and reaches its highest levels among entrepreneurs working 60 hours or more. The alignment is particularly close in the 41–59 hour group,

where the model nearly matches the data average, and the overall rank ordering across bins is preserved. Despite minor deviations in levels, the model captures the central fact that employment increases sharply with entrepreneurial hours, supporting the mechanism whereby greater entrepreneurial time is associated with larger firm size.
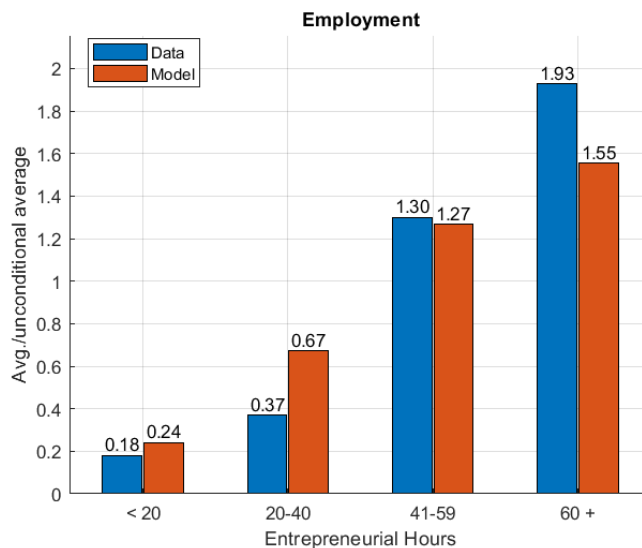

Figure 8: Average Employment as a % of UC Average by Hours Bin

4.3 Sales by Entrepreneurial Hours

As shown in Figure 9, the model closely tracks the empirical relationship between entrepreneurial hours and firm sales. Businesses run by entrepreneurs devoting fewer than 20 hours achieve the smallest sales volumes, while those with longer workweeks show progressively higher sales. The rise is not only monotonic but also steep, with especially close alignment between model and data in the 41–59 hour range. Although small discrepancies remain in levels, the essential pattern is well reproduced: sales expand systematically with the time entrepreneurs dedicate to their firms, underscoring the importance of entrepreneurial hours in driving revenue outcomes.
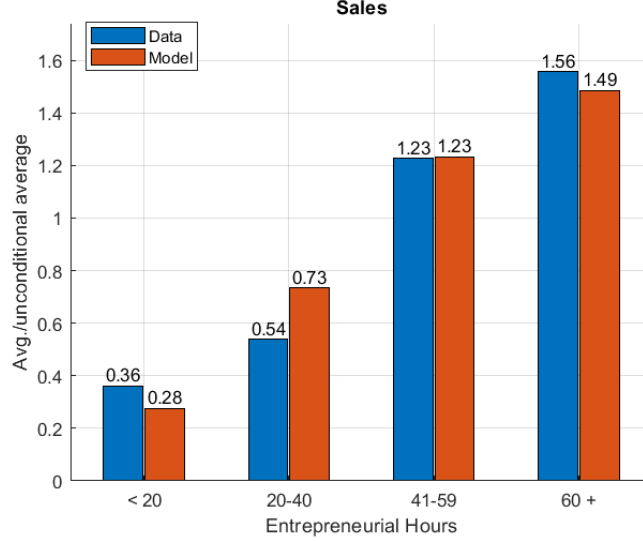
Figure 9: Average Sales as a % of UC Average by Hours Bin

4.4 Assets

Figure 10 highlights an important dimension where preferences matter: the relationship between entrepreneurial hours and assets. In the data, entrepreneurs working fewer than 20 hours hold relatively modest asset stocks, while those in the middle of the distribution (41–59 hours) are the most asset-rich. A standard framework with only productivity heterogeneity would struggle to account for this pattern, instead pushing wealthy entrepreneurs disproportionately into the low-hour group. By incorporating preference heterogeneity, the model generates both asset-poor and asset-rich firms across the distribution, producing a more realistic mix even if some deviations remain in levels. This highlights that differences in preferences are essential for reconciling hours and asset holdings in the data.
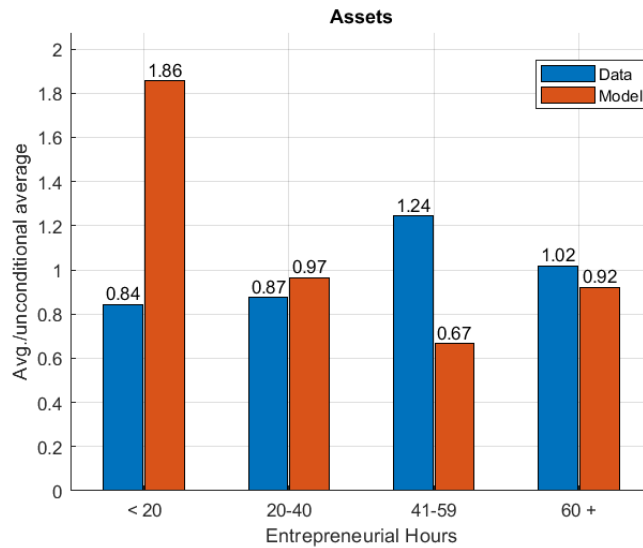

Figure 10: Average Assets as percentage of UC avg. assets per Entrepreneur by Hours Bin

4.5 Summary

Across all four dimensions—hours worked, employment, sales, and assets—the model aligns closely with the data. It reproduces the broad distribution of entrepreneurial hours, the scaling of employment and sales with time input, and the variation in asset holdings across hour groups. Crucially, the model captures both ends of the spectrum: part-time entrepreneurs running small firms and long-hour entrepreneurs managing large operations. Matching these tails alongside the middle of the distribution is a demanding test that standard models typically fail, yet the model is able to achieved. The results provide compelling evidence that preference heterogeneity is indispensable for explaining the diversity of entrepreneurial choices and outcomes observed in the data.

5   Experiments

Having established that the model replicates the key empirical patterns, I now turn to a series of counterfactual experiments designed to isolate the mechanisms that drive entrepreneurial outcomes. Each experiment modifies a core element of the environment—preferences, financial frictions, or the production technology—to assess its role in shaping the distribution of hours, firm size, and performance. These exercises provide insight into the contribution of preference heterogeneity, the importance of borrowing constraints, and the strength of complementarities between entrepreneurial labor and hired labor in sustaining the patterns observed in the data.

5.1   Counterfactual 1: Homogeneous Preferences (No Leisure Heterogeneity)

Figure 11 reports the outcomes when heterogeneity in leisure preferences is switched off. All individuals are homogeneous in their preferences for leisure, so all entrepreneurs face identical trade-offs over work and non-work time. The contrast with the benchmark is striking. The distribution of hours collapses: the share of entrepreneurs working fewer than 20 hours nearly disappears, while mass shifts heavily into the 20–40 hour range. At the same time, the upper tail of long-hour entrepreneurs remains present but compressed, reducing overall dispersion. Compared to the benchmark, which generated substantial variation at both margins, this version produces a far narrower allocation of labor supply.

This narrowing carries through into firm outcomes. Sales and employment become concentrated in the middle of the distribution, weakening the steep scaling of firm size with hours that appears in the benchmark. Assets change most sharply: the few entrepreneurs remaining at low hours now appear disproportionately wealthy, producing a strong concentration of asset-rich small firms. This stands in contrast to the data, where low-hour entrepreneurs are typically asset-modest or asset-poor and the small-firm segment spans a much wider range of wealth levels.

Without preference heterogeneity, entrepreneurs no longer sort into different working regimes on the basis of leisure–labor trade-offs. Productivity differences alone determine allocation: wealthier entrepreneurs can afford to scale back their hours, while less wealthy entrepreneurs must work more. The outcome is an unrealistic concentration of rich entrepreneurs in the low-hours group and a collapse in the diversity of outcomes. Allowing preferences to vary restores this diversity and is therefore essential for matching the joint distribution of hours, assets, and firm scale.
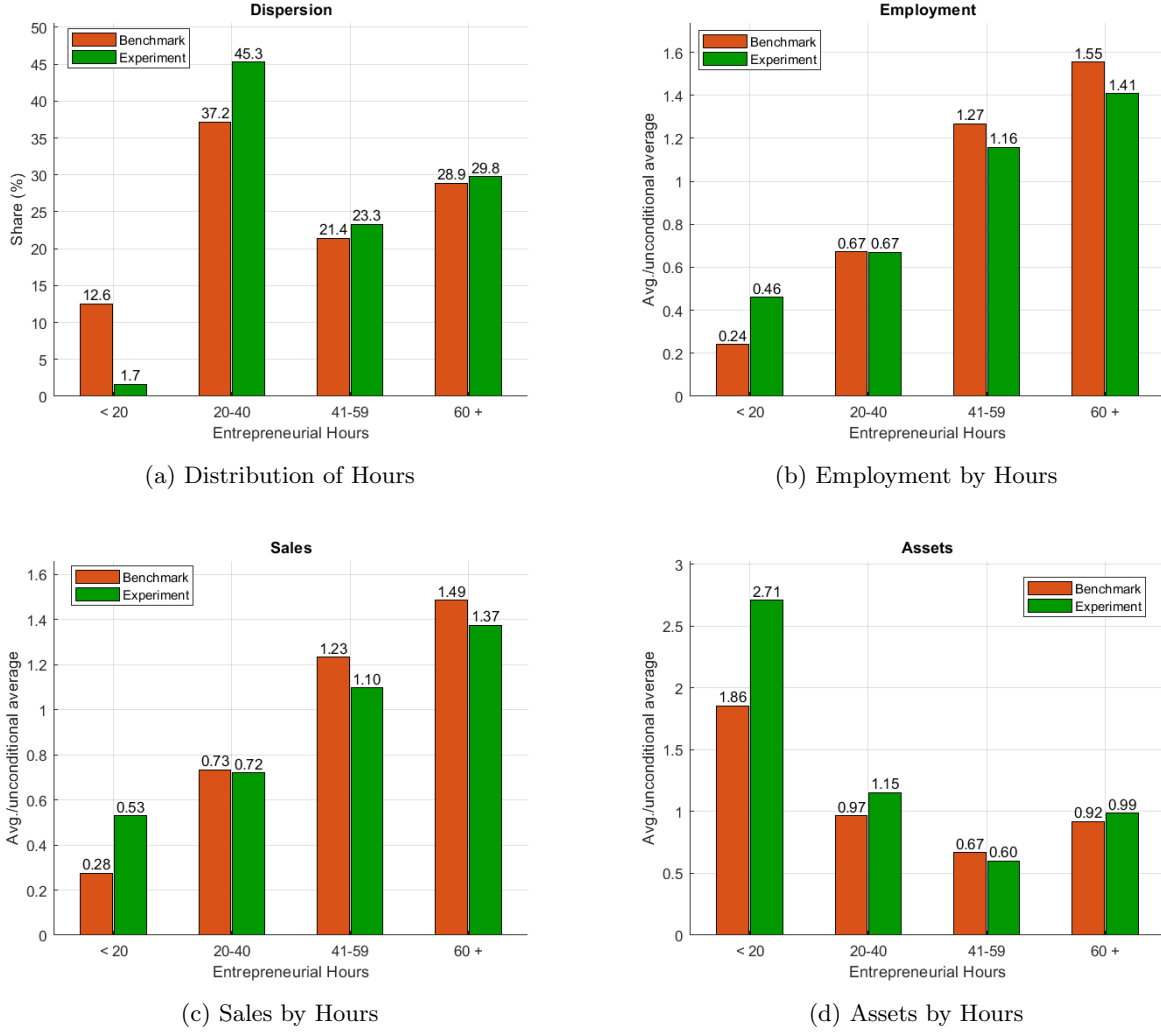
(a) Distribution of Hours

(b) Employment by Hours

(c) Sales by Hours

(d) Assets by Hours

Figure 11: Counterfactual without Preference Heterogeneity

5.2 Relaxed Financial Constraint

Figure 12 reports the outcomes when the financial constraint is relaxed. In the benchmark, entrepreneurs can raise external capital up to 1.5 times their asset holdings. Here, the limit is doubled, allowing capital to scale up to three times assets. By construction, this allows entrepreneurs to potentially operate at larger scales even if their own wealth is modest. This experiment isolates the role of borrowing capacity in shaping entrepreneurial choices.

Relative to the benchmark, the effects are modest. The overall distribution of hours remains very similar, with most entrepreneurs continuing to cluster in the 20–40 and 60+ hour ranges. The share of those working fewer than 20 hours changes little. Employment and sales rise slightly in the mid- and high-hour categories, while asset levels increase modestly across bins but preserve the same ranking by hours. Crucially, there is no noticeable expansion among low-hour entrepreneurs, even though they now face looser borrowing limits. If financial frictions were the key force preventing small firms from growing, the less than 20 and 20–40 hour groups should have expanded sharply once additional capital became available. The fact that they do not reveals that borrowing constraints are not the main driver of the observed patterns. Instead, en-

trepreneurs' willingness to supply hours—and the underlying heterogeneity in preferences over leisure versus work—remains the central factor shaping both firm size and dispersion in outcomes. Financial frictions adjust levels at the margin but do not fundamentally alter the structure of entrepreneurial choices.
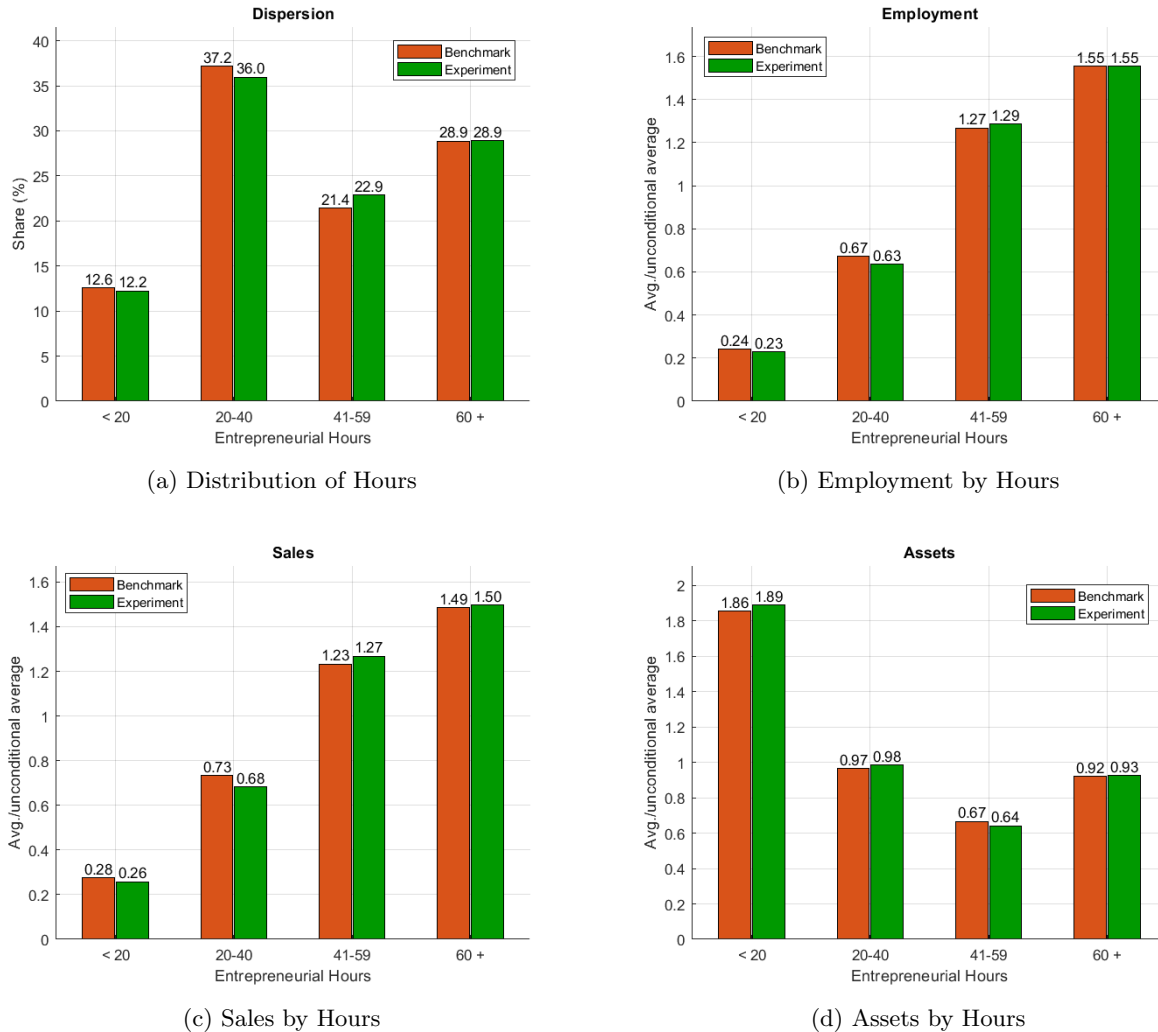

(a) Distribution of Hours

(b) Employment by Hours

(c) Sales by Hours

(d) Assets by Hours

Figure 12: Counterfactual with Relaxed Financial Constraint

5.3 Relaxed Financial Constraint with Homogeneous Preferences

This experiment combines the relaxation of the financial constraint with the removal of preference heterogeneity. The individuals are homogeneous in their preferences and can borrow up to three times their assets. The outcomes are stark. As shown in Figure 13, the distribution of hours collapses further, with the share of very low-hour entrepreneurs (<20) almost vanishing, while mass is pulled into the middle of the distribution. Sales and employment patterns shift only marginally, remaining close to the benchmark in the higher-hour ranges. The largest divergence appears in assets: low-hour entrepreneurs emerge as the wealthiest group, creating an artificial concentration of asset-rich small firms. This contrasts sharply with the data, where low-hour entrepreneurs are generally asset-modest or asset-poor.

The economic logic is clear. If financial frictions were the main constraint on small firms, relaxing them

should have enabled more entrepreneurs to scale up. Yet this is not what occurs: in the absence of preference heterogeneity, the entrepreneurs who work the fewest hours are also those with the most wealth, choosing to operate small but highly capitalized firms. The result underscores that capital constraints alone cannot explain the observed joint distribution of hours, size, and assets. Variation in leisure preferences is essential to generate the diversity of outcomes seen in reality.
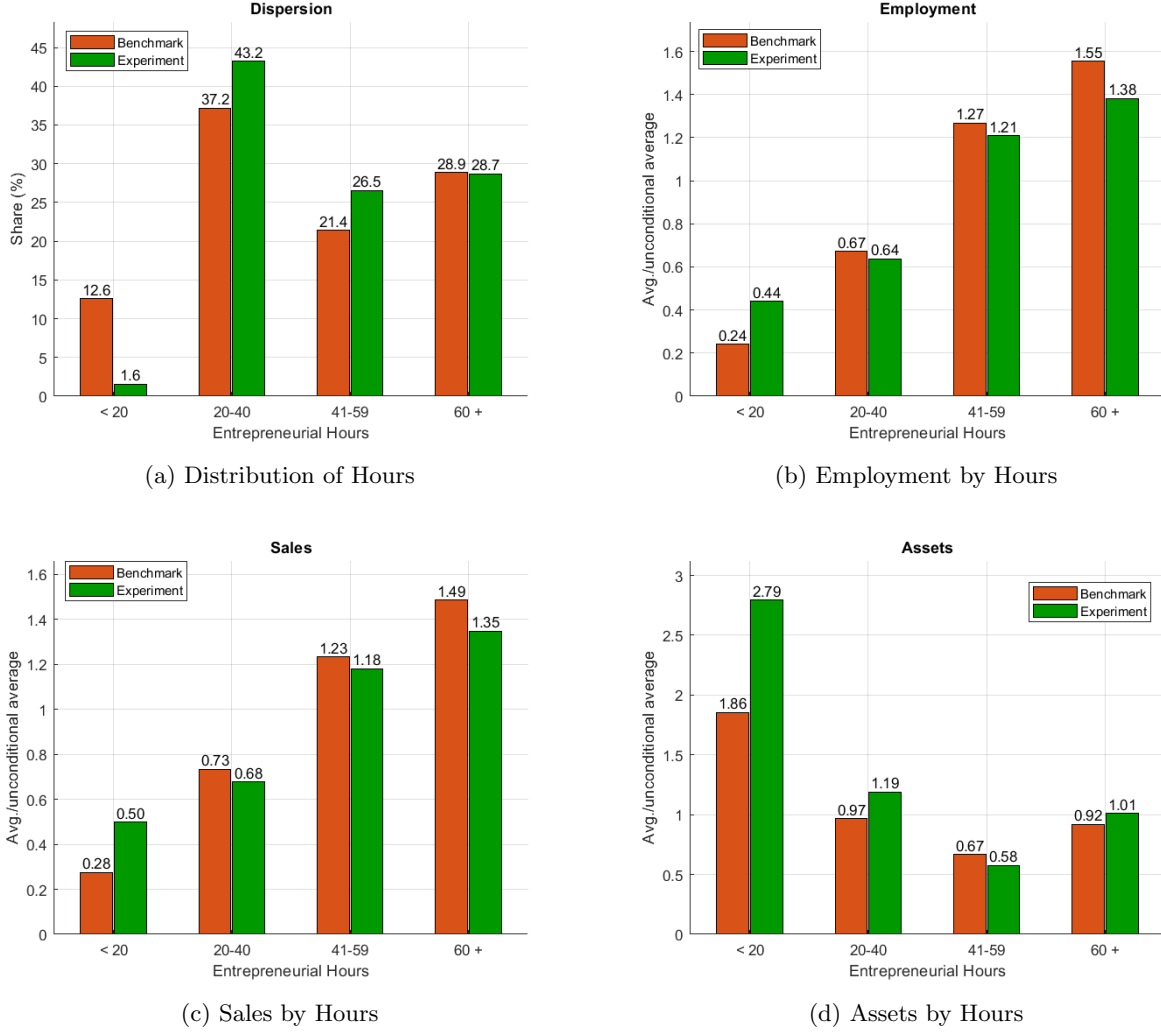

(a) Distribution of Hours

(b) Employment by Hours

(c) Sales by Hours

(d) Assets by Hours

Figure 13: Relaxed Financial Constraint with Homogeneous Preferences

5.4 Lower Complementarity between Entrepreneurial Hours and Hired Labor

Figure 14 shows the outcomes when the degree of complementarity between entrepreneurial hours and hired labor is reduced. Relative to the benchmark, the distribution of hours changes drastically. Almost all entrepreneurs collapse into the lowest bin of fewer than 20 hours, while the middle and upper ranges (20–40, 41–59, and 60+) nearly disappear. This collapse in dispersion is mirrored in firm outcomes. Sales and employment are no longer spread across the hour distribution but instead surge at the very top: firms in the 60+ hours group become disproportionately large, while intermediate-hour entrepreneurs vanish. Assets also concentrate unevenly: low-hour firms retain modest capital, but those operating at the very top dominate

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the asset distribution. Overall, the experiment generates a dual structure where the economy is split between many low-hour firms and a few extremely large ones, in sharp contrast to the benchmark where firms of different sizes coexist more evenly.

The mechanism highlights the crucial role of complementarity. When the productivity of hired labor depends strongly on the entrepreneur's own hours, there is discipline in the allocation of time: entrepreneurs choose intermediate or high effort levels, generating a balanced spread of firm sizes. Weakening complementarity removes this discipline. Most entrepreneurs scale back their hours, as their time is no longer essential, while the most productive firms expand aggressively by substituting hired labor for hours, creating extreme concentration at the top. The distorted outcomes of this experiment underscore why strong complementarity is necessary: without it, the model cannot reproduce the observed distribution of entrepreneurial choices and firm outcomes.
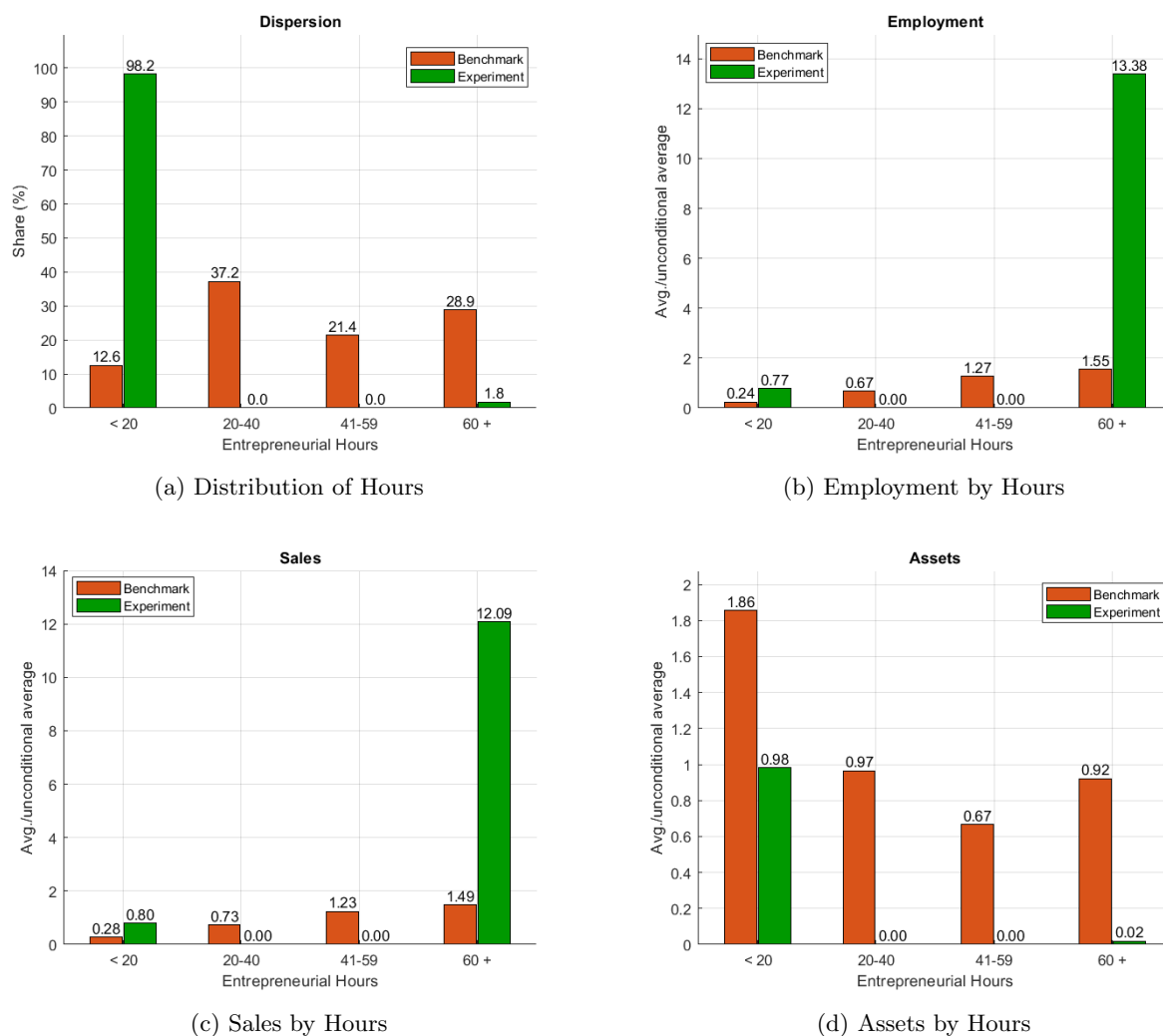

(a) Distribution of Hours

(b) Employment by Hours

(c) Sales by Hours

(d) Assets by Hours

Figure 14: Counterfactual with Lower Complementarity Between Entrepreneurial Hours and Hired Labor

5.5   Substitutability between Entrepreneurial Hours and Hired Labor

(a) Distribution of Hours

(b) Employment by Hours
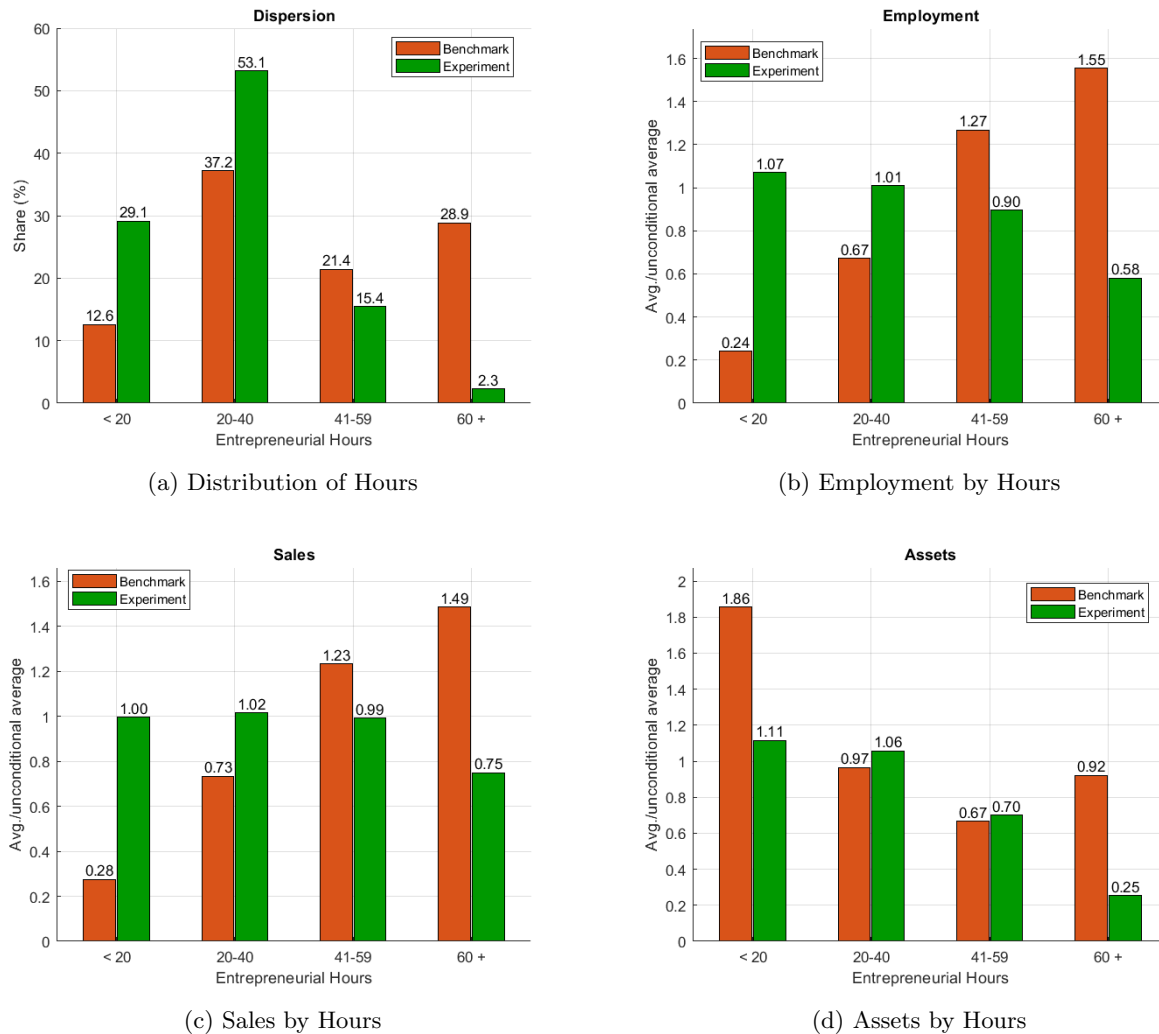
(c) Sales by Hours

(d) Assets by Hours

Figure 15: Counterfactual with Substitutability between Entrepreneurial Hours and Hired Labor

Figure 15 presents the outcomes when entrepreneurial hours and hired labor are treated as substitutes rather than complements. The distribution of hours shifts sharply: the share of entrepreneurs working long hours (60+) nearly disappears, while the mass of mid-hour entrepreneurs (20–40 hours) expands considerably. This contraction at the top end leads to a redistribution of activity across the distribution, compressing the range of observed hours.

Firm outcomes move in line with this reallocation. Employment and sales by high-hour entrepreneurs fall drastically, with large operations shrinking or vanishing altogether. In contrast, small and mid-sized firms appear artificially elevated, with both employment and sales higher than in the benchmark. Asset holdings are also distorted: the few remaining long-hour firms no longer accumulate significant wealth, while mid-hour firms become relatively more asset intensive.

The mechanism driving these patterns is straightforward. With substitutability, entrepreneurs can replace their own effort with hired labor, reducing the need to work intensively to operate large firms. This weakens the scaling relationship between entrepreneurial hours, firm size, and assets. As a result, large-scale firms

fail to emerge endogenously, while small and mid-sized firms are overstated in both size and wealth. This demonstrates that complementarity between entrepreneurial effort and hired labor is essential for matching the data: without it, the model loses its ability to generate the coexistence of both small-scale part-time operations and large-scale intensive enterprises.

6 Conclusion

This paper shows that the wide variation in entrepreneurial hours—and their strong correlation with firm size and asset accumulation—cannot be explained by productivity or financial frictions alone. A structural model with heterogeneous preferences over leisure successfully accounts for these patterns, highlighting that preference heterogeneity is indispensable for generating both small, low-hour firms and large, high-hour operations. Counterfactual experiments further demonstrate that easing financial constraints has limited effects, whereas the complementarity between entrepreneurial time and hired labor is central to scaling. These findings underscore the importance of preferences in shaping entrepreneurial outcomes and suggest that policy efforts focused solely on credit access may have modest effects on firm growth.

A Empirical Evidence from alternative dataset: SBO
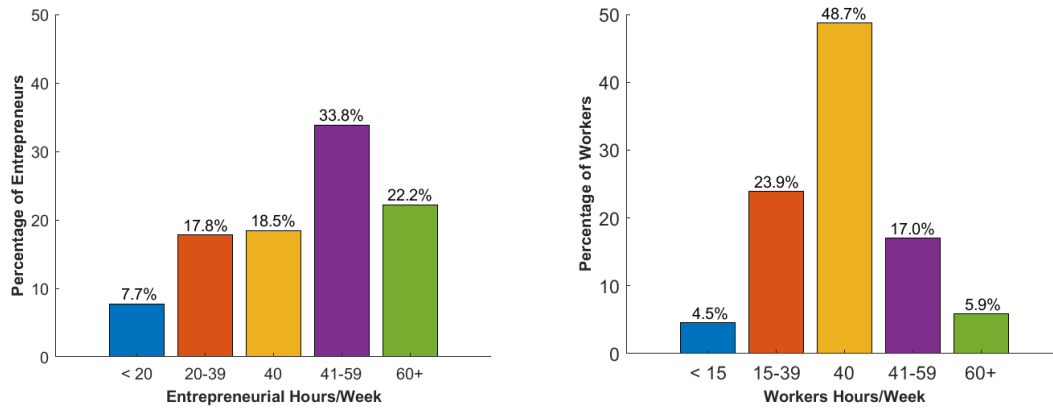

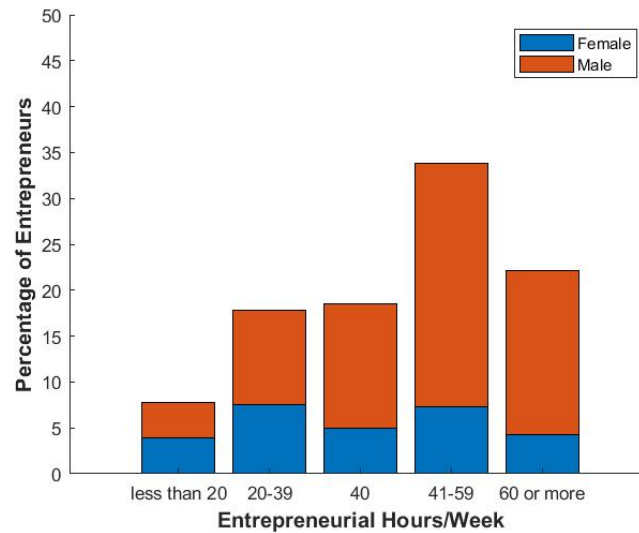Figure 16: Distribution of Weekly Hours: Entrepreneurs vs. Workers

Gender

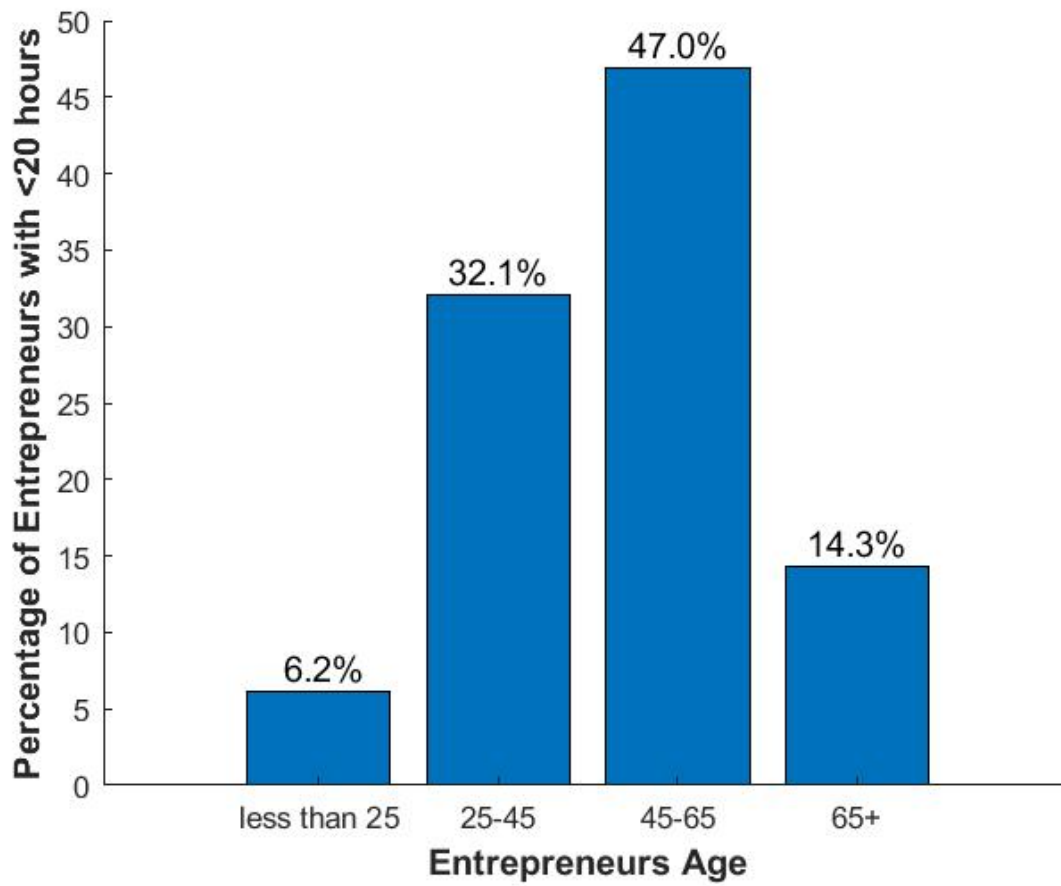Figure 17: Entrepreneurial Hours Distribution by Gender

Figure 18: Less than 20 hours

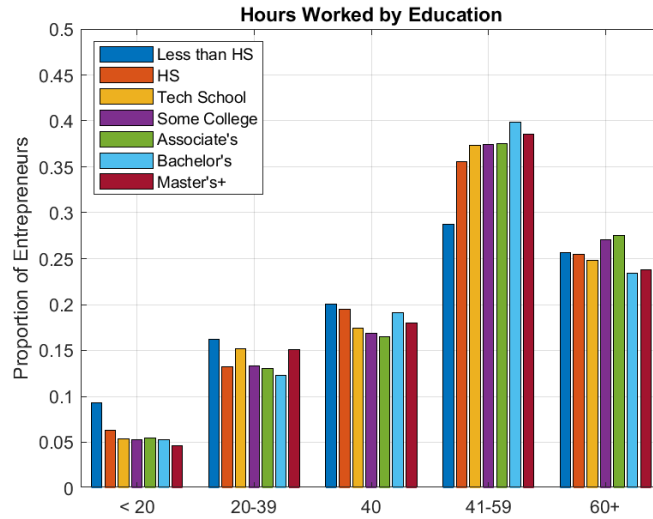Figure 19: Distribution of Weekly Hours by Age

Education

Figure 20: Entrepreneurial Hours Distribution by Education

Proportion of Entrepreneurs less than 20 Hrs	Education Level
10.2%	Less than High School
21.9%	High School
6.8%	Technical School
16.4%	Some College
5.4%	Associate's
23.1%	Bachelor's
15.7%	Master's+

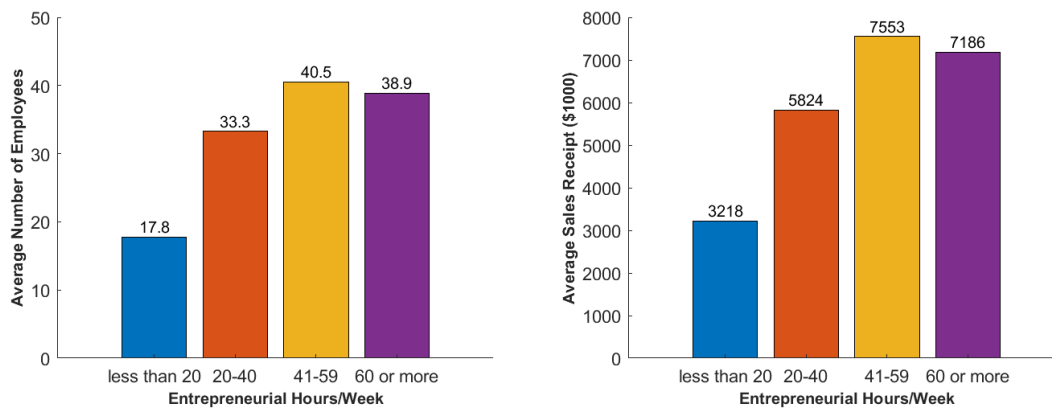Table 4: Proportion of Entrepreneurs Working Less Than 20 Hours by Education Level

Figure 21: Entrepreneurial Hours and Firm Size