

Abstract

This study examines the employment growth of firms founded by user entrepreneurs in comparison with other types of entrepreneurship. In contrast to conventional entrepreneurship that individuals or businesses develop new products to fill latent demands in the market, user entrepreneurs develop products to satisfy their own needs and enter markets only after the utility has been demonstrated. Using the establishment-level microdata from the 2014 Rural Establishment Innovation Survey and the Longitudinal Business Database, we estimate the growth trajectories of firms with various types of entrepreneurship origins using random coefficient and quantile regression models. We find that firms founded by user entrepreneurs have higher employment growth rates in the first five years, but slower growth rates in subsequent years. Our study confirms the contribution of user entrepreneurship to job creation and calls for explicit acknowledgement and identification that to date has been lacking in entrepreneurship evaluation and promotion programs.

Introduction

Research questions

What are the employment growth trajectories of firms founded by user entrepreneurs? Are they different than those founded by conventional or other types of entrepreneurs?

Who are user entrepreneurs?

"The commercialization of a new product and/or service by an individual or group of individuals who are also users of that product and/or service." (Shah and Tripsas 2007, p.124)

Our contribution to the literature

- This is the first paper using econometric models to evaluate the growth performance of firms founded by user entrepreneurs.
- Previous studies on user entrepreneurship were mostly qualitative, except Shah, Smith, and Reedy (2012) using the Kauffman Firm Survey (KFS).

A snapshot of the REIS survey question and how we define user entrepreneurs

43. Do you have a good understanding of the decisions that led to the founding of this business?

- Yes
 No → Skip to question 44 on the next page

43a. (If Yes) Was the business originally founded around a new or customized product or service that was created by one of the founders of the business?

- Yes
 No → Skip to question 44 on the next page
 Don't know → Skip to question 44 on the next page

43b. (If Yes) Thinking about this new or customized product or service, why was it originally developed?

- One of the founders created it for personal use
 One of the founders created it for use at a previous job or business
 One of the founders identified a business opportunity

Unknown-type or non-entrepreneurs

End-use user entrepreneurs

Professional user entrepreneurs

Conventional entrepreneurs

User entrepreneurs

Source: USDA ERS (2014) National Survey of Business Competitiveness.

Data

The 2014 Rural Establishment Innovation Survey (REIS)

The REIS is the first nationally representative sample of self-reported innovation and user entrepreneurship in the tradable rural nonfarm sector (Wojan and Parker 2017).

The 1990-2019 Longitudinal Business Database (LBD)

- The LBD is a confidential database with microdata for private, nonfarm business establishments, accessed via the Federal Statistical Research Data Center (FSRDC).
- We linked establishments in the 2014 REIS with their records in the 1990-2019 LBD, matched by EIN, 3-digit NAICS, and FIPS.

Sample selection

- We confined the samples to single-unit establishments to avoid confounding factors, e.g., location, management, and the distribution effect of branches, and to limit our focus on small or medium-sized firms.
- We choose firms established after 1990 and before 2014 to observe their full employment history given data availability.

Potential problem in sample selection

- We cannot observe the survivability of establishments with different types of entrepreneurs who had exited the business before 2014 when the REIS was conducted.
- We need to control heterogeneity in initial conditions of founding and growth potentials over a long period of 1990-2014.

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Methods

❖ We divide the samples into three cohorts to mitigate the concern over heterogeneity of initial conditions and growth potentials.

Cohort 1: founded in 1990-1999; cohort 2: founded in 2000-2009; cohort 3: founded in 2010-2014

❖ We use two modeling methods—random coefficient growth models and quantile regression models—to account for firm heterogeneity and the right-tailed growth distribution.

○ Random coefficient growth model (multilevel model)

- Level 1 (establishment-year): $\ln y_{it} = \beta_{0i} + \beta_{1i}t + \beta_{2i}t^2 + \beta_{3i}t^3 + \varepsilon_{it}$
- Level 2 (establishment): $\beta_{ki} = \pi_{k0} + X_i\gamma_k + b_{ki}$, for $k = 0, 1, 2, 3$
 - Random effects: $\mathbf{b}_i = (b_{0i}, b_{1i}, b_{2i}, b_{3i})' \sim MVN(\mathbf{0}, \Sigma)$
 - AR(1) within-group error: $\varepsilon_{it} = \phi\varepsilon_{it-1} + v_{it}$, $v_{it} \sim N(0, \sigma^2)$

○ Quantile regression model: $Q_\tau(\Delta \ln y_{it} | X_i) = X_i'\theta(\tau)$, for $\tau \in (0, 1), t = 1, \dots, T$

○ y_{it} is the level of an establishment i 's employment; X_i includes entrepreneur types, initial employment size, industry (3-digit NAICS) and state fixed effects; $\Delta \ln y_{it} \doteq \ln y_{it} - \ln y_{it-4}$, the five-year growth rate of establishment i 's employment.

Results

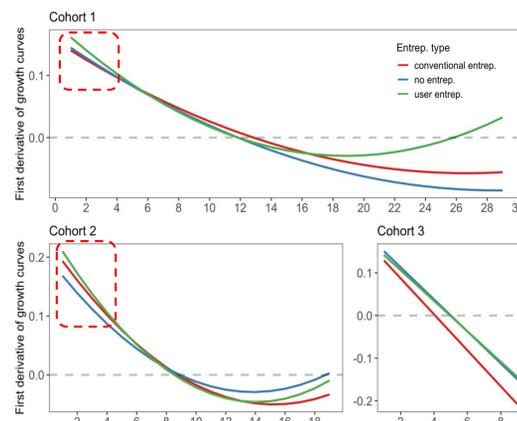


Figure 1. Estimated first-order derivative of growth curves with respect to time for each type of entrepreneurs derived from the random coefficient models.

○ Given the different length of firm-year observations for each cohort, cohorts 1 and 2 have a cubic polynomial model of trend so that their first-order derivative is a quadratic function, and cohort 3 has a quadratic trend model so that the first-order derivative is a linear function.

○ The growth rates in the first five years for establishments with user entrepreneurship in cohorts 1 and 2 are higher than for other types of entrepreneurs (circled in red). However, the difference is not statistically significant.

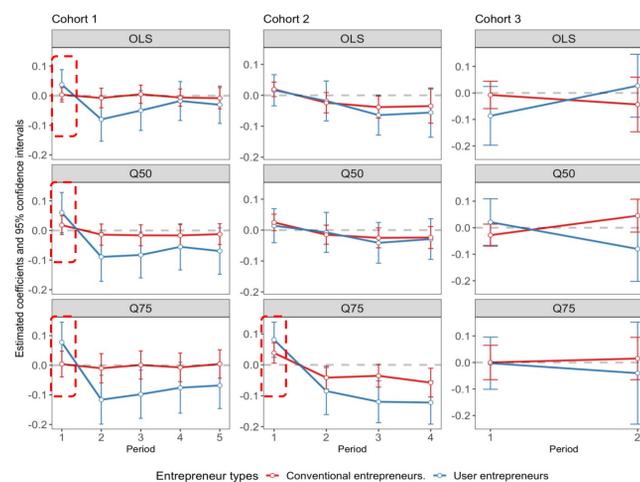


Figure 2. Estimated coefficients on user versus conventional entrepreneurs in quantile regression models.

○ The firm-year observations are grouped into the 5-year periods.

○ For cohorts 1 and 2, the employment growth rate of establishments with user entrepreneurship is higher than for other types in the first five-year period, which is statistically significant especially at the third quartiles (circled in red).

Conclusions

❖ Firms with user entrepreneurship tend to have faster employment growth in the first five years than those with other types of entrepreneurship, especially at the upper quantile of firm employment growth distribution.

❖ The REIS/KFS question is included in the provisional 2024 ABS survey that will provide much larger samples and help differentiate entrepreneurial firms introducing new products from businesses founded to supply standard products.

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